

INDOMITABLE

The Heroic Struggle to Invent the MRI

by

Tom Attea

Based on the book *A Machine Called Indomitable*
by Sonny Kleinfeld, reporter for *The New York Times*,
along with later material

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FADE IN:

INT. VIOLIN TEACHER'S STUDIO - DAY

RAYMOND DAMADIAN, who will invent the MRI, one of the great medical inventions of the 20th Century, is now a nice-looking, muscular boy, age eight. He is standing, with his violin. His FATHER and MOTHER are also present.

VIOLIN TEACHER

Your son has exceptional musical talent,
and I think it's time for him to continue
his studies at Juilliard.

MOTHER

But how will he get in?

VIOLIN TEACHER

I'll arrange for an audition.

CUT TO:

INT. CAR - DAY

DAMADIAN is being driven to his audition at Juilliard by his FATHER, a naturalized citizen who fled the genocide in Armenia. He is in his 40s, with a sharply featured face and a moustache; his black hair is streaked with gray. A violin case rests on his son's lap.

FATHER

If you pass, I will bring you for your
music lesson every week. I don't care for
how many years.

CUT TO:

INT. AUDITION ROOM, THE JUILLIARD SCHOOL - DAY

The school is housed in its older building, which is in Manhattan's West 80s, not in its present Lincoln Center location.

DAMADIAN holds out his violin toward the FIRST MUSIC TEACHER. The teacher takes it.

FIRST MUSIC TEACHER

Do you like to play the violin, Raymond?

DAMADIAN

Yes, sometimes.

The teacher attempts to tune the instrument but finds that the pins are frozen.

FIRST MUSIC TEACHER

How long has it been since you practiced?

DAMADIAN

A while.

MUSIC TEACHER

Do you have a piece you'd like to play
for me?

Damadian shakes head yes. Teacher hands him the tuned
instrument.

MUSIC TEACHER (CONT'D)

May I hear it?

Damadian puts the violin in position and begins to play
the adagio from the Violin Concerto Number Three by
Mozart. At first he is uneasy, but he is able to grow
into the performance and continues with surprising
feeling for a child of his age.

DISSOLVE TO:

INT. CAR - DAY

DAMADIAN and his FATHER are driving home.

FATHER

How did you do, son?

DAMADIAN

I don't think I passed.

FATHER

You don't? But I taught you how to play.
You would have done better if you
practiced more.

INT. LAB AT NMR SPECIALTIES - DAY

DAMADIAN is now a handsome man in his thirties, with hair
and a moustache that is salt and pepper but mostly black.
His hair will gray as the film progresses. He is at NMR
Specialties, which is located in New Kensington,
Pennsylvania, with FREEMAN COPE, a fellow medical
researcher. Cope is about the same age, with an oval face
and circular glasses.

Cope is performing a chemical analysis, using an NMR
machine, as DAMADIAN looks on intently. A graph moves
across the screen, generated by a nuclear magnetic
resonance signal from potassium.

COPE

Just pop the potassium in the NMR machine, around it spins, and out comes the chemical analysis.

DAMADIAN

Do you know how long it would have taken me to do this in the lab? Two weeks, at least!

CUT TO:

INT. RESTAURANT AT HOLIDAY INN - DAY

DAMADIAN and COPE are having lunch. A swimming pool is visible in the lawn through the window. Damadian is gazing at it.

DAMADIAN

(mind wanders)

I'm was just thinking, Freeman. The potassium content of a cancer cell is different from the amount in a normal cell.

COPE

Yes, it is.

DAMADIAN

So I was wondering if NMR could be used to detect cancer?

COPE

Interesting thought, Ray. To my knowledge, no one's done tissue experiments.

DAMADIAN

I was thinking about scanning the human body.

COPE

The NMR community has been analyzing chemicals for over thirty years. And no one has ever contemplated scanning a human body. They'll think we're crazy.

DAMADIAN

What else is new?

COPE

Do you realize how big the magnet would have to be? Even one with a chamber this big ...

(points to pencil)

... costs a fortune.

DAMADIAN

But, Cope, think of the potential.
Noninvasive cancer detection!

COPE

But the chemical sample in an NMR spins.
What are you going to do, spin the
patient?

DAMADIAN

What if we work on the idea together?

COPE

Where would we get the funding? We're
medical doctors, Ray. Not NMR
specialists. I suggest you pick a
research project that's more practical.

CUT TO:

INT. NMR SPECIALTIES - DAY

Office of PAUL YAJKO, the president of the company.
DAMADIAN enters.

DAMADIAN

Paul, do you mind if I come back in a
couple of weeks to do another experiment?

YAJKO

What sort of experiment?

DAMADIAN

I want to see if NMR can detect the
difference between normal tissue and
cancer tissue.

YAJKO

What if it could?

DAMADIAN

I was thinking it might be possible to
build an NMR machine that's big enough to
hunt down cancer in a live human being
in.

Yajko looks at him quizzically.

CUT TO:

INT. CAR - DAY

DAMADIAN is driving home.

DISSOLVE TO:

INT. BEDROOM - DAY

FLASHBACK:

DAMADIAN, as a young man, looks on as his GRANDMOTHER, lying in bed, is dying in agony from cancer. His MOTHER tries to console her, as his FATHER looks on. His GRANDMOTHER expires.

FATHER
(to wife)
She's gone now, dear.

MOTHER
It was such a terrible cancer.

FATHER
Your mother's suffering is finally over,
dear.

INT. DAMADIAN HOME - NIGHT

DAMADIAN enters his home, a nice but still sparsely furnished house in Long Island. He's is carrying two small cages with three white mice in each.

DAMADIAN
(calls)
Hi, Donna! I'm home.

He looks for a place to put the cages. His wife, DONNA, enters.

DAMADIAN (CONT'D)
Great news!

DONNA
What?

DAMADIAN
(holds up cages)
I got the rats - all with Walkers
sarcoma.

Donna reacts.

DONNA
Can't you leave them outside?

DAMADIAN
They'll only be here for one night. Kids
asleep?

DONNA
Since nine. But I had a hard time getting them to go to bed. They wanted to wait up to see those things.

CUT TO:

INT. NMR SPECIALTIES, LAB - DAY

DAMADIAN is standing beside the NMR machine with a rat cage in each hand.

LADY
(holds out skimpy operating manual)
Here's an operating manual. It's not much, but it's all we have.

CUT TO:

SAME, LATER - DAY

DAMADIAN at NMR machine with operating manual.

CUT TO:

MONTAGE - EXPERIMENTS WITH RATS

CLOSE SHOT as he surgically removes a tumor from the tail of a mouse. He puts the tumor in a test tube that has water in it. Then he puts the test tube in the NMR machine. SHOTS of him taking readings and making notes. Surprised look.

DISSOLVE TO:

INT. YAJKO'S OFFICE - DAY

YAJKO is sitting at his desk, and DAMADIAN is sitting across from him

YAJKO
How'd you do?

DAMADIAN
Fantastic! The relaxation time for cancer tissue is significantly different than normal tissue.

YAJKO
Are you sure?

DAMADIAN

I need to confirm my findings. But I'm out of rats. Would it be possible for me to come back with more?

DISSOLVE TO:

INT. DAMADIAN HOME - NIGHT

Family dinner - DAMADIAN, DONNA, and their three children: a daughter, KEIRA, and two sons, JEVAN and TIM.

JEVAN

You killed all the rats, Dad?

DAMADIAN

They died for science, Jevan. But there are more where those came from.

TIM

(to Donna)

Can we stay up to see them this time?

KEIRA

How disgusting!

CUT TO

INT. NMR SPECIALTIES, LAB - DAY

DAMADIAN is making notes at the NMR machine. DONALD VICKERS, a youngish, black vice president enters.

VICKERS

(puts out hand to shake)

Donald Vickers. Vice president in charge of applications for the NMR. How's it coming?

DAMADIAN

This time, I took NMR readings of two different kinds of tumors. Same result. The signals are very different than those from normal tissue. I also compared the signal from different kinds of normal tissue -- heart, kidney, lungs, muscle. All different.

VICKERS

What do you plan to do with this?

DAMADIAN

Detect cancer. But first I've got to publish my findings.

CUT TO:

EXT. JOHNS HOPKINS - DAY

CAMERA moves in on window.

DISSOLVE TO:

CLOSE SHOT - SCIENCE MAGAZINE - DAY

COVER of Science magazine, issue of March 19, 1971. Lead article: "'Tumor Detection by Nuclear Magnetic Resonance,' By Raymond V. Damadian, MD."

CAMERA pulls back to reveal that the magazine is being read by Dr. Donald Hollis, an NMR researcher at Hopkins. He puzzles over the content, as a graduate student, James Economou, comes rushing in with a copy of the same issue of Science.

ECONOMOU

Dr. Hollis, did you see this? A guy named Damadian says you can use NMR to detect cancer.

HOLLIS

(holds up magazine)
Just read it.

ECONOMOU

What do you think?

HOLLIS

It doesn't make much sense, at least, to me.

ECONOMOU

What if we try to replicate his experiments?

HOLLIS

We're not equipped to do that.

ECONOMOU

What if we go to the same place he did the work?

CUT TO:

INT. DOWNSTATE MEDICAL CENTER, DAMADIAN'S LAB - DAY

DAMADIAN is sitting at his desk, talking with ED EDELSON, a freelance science reporter.

EDELSON

But, Dr. Damadian, I don't understand how it's going to work.

DAMADIAN

The device doesn't have to be highly elaborate. It would consist of a movable magnet and a coil to emit radio waves. The coil would be wrapped around the patient's chest, while the magnet would be passed back and forth across the body. A receiver would pick up the NMR signals from the tissue.

EDELSON

What obstacles do you see?

DAMADIAN

You have to know exactly where the tumor is.

EDELSON

How do you achieve that?

DAMADIAN

It's a challenge. I just developed a 3-D scanning method - the world's first.

EDELSON

What's next?

DAMADIAN

I need to patent my cancer-detection apparatus.

EDELSON

I understand that the NMR machine you ordered is quite large. How do you plan to fit it in here?

DAMADIAN

I asked the dean for the room under us. We can knock out the floor. But this is just the beginning. The most I'll be able to fit into it is a monkey.

EDELSON

How are you do you plan to fund all this?

DAMADIAN

I've applied for a grant to the Health Research Council of New York.

CUT TO:

CLOSE SHOT - THE DOWNSTATE REPORTER

Issue features a shot of Damadian at work in his lab; the headline is: "Basic Research Leads to Radio Signals From Cancer Tissue."

CUT TO:

INT. NMR SPECIALTIES - DAY

HOLLIS and ECONOMOU are at the NMR machine. Economou places a test tube with a rat tumor in the machine.

CUT TO:

SAME - LATER

HOLLIS and ECONOMOU are looking over their results. VICKERS comes up to them, with PAUL LAUTERBUR, a research scientist in his 40s, with a round face, thinning hair, and large, plastic-rimmed glasses.

VICKERS

How'd you do?

ECONOMOU

Our tests confirm Damadian's work.

HOLLIS

Oddly enough.

VICKERS

Let me introduce Paul Lauterbur. He recently became the president and chairman of the company.

HOLLIS

(shakes Lauterbur's hand)
Donald Hollis, Johns Hopkins.

LAUTERBUR

I'm familiar with your work.

HOLLIS

Familiar with yours, too. Great stuff, especially the NMR work on boron. This is Jim Economou, a graduate fellow who works for me.

LAUTERBUR

Tell me more about what's going on here.
Something about NMR and cancer detection,
is it?

(to Vickers)

Novel application, wouldn't you say?

CUT TO:

INT. BIG BOY RESTAURANT - NIGHT

LAUTERBUR and VICKERS are eating hamburgers.

LAUTERBUR

Don, I've been thinking. If you took a
gradient and put it in front of these
signals from tissue, you'd smooth out the
signal and get a better map.

VICKERS

Yes, you would.

LAUTERBUR

But you'd still be dealing in only one
dimension. You'd want three. I have to
think about the math.

DISSOLVE TO:

LAUTERBUR'S OFFICE - DAY

VICKERS has entered. LAUTERBUR is at his desk.

LAUTERBUR (CONT'D)

I need you to witness my notebook. It's a
crackerjack of an idea!

He holds out open tan spiral notebook. Vickers looks at
it.

CUT TO:

REVERSE SHOT: NOTEBOOK. We see Lauterbur's notations of
his idea to use the gradient. Damadian's name appears as
a credit in parenthesis after the notation.

TWO SHOT: Lauterbur and Vickers.

VICKERS

I see you credited Damadian.

Lauterbur doesn't respond to the comment. Vickers signs
as a witness.

LAUTERBUR

I've made a decision, Don. I'm going to resign and work full-time on this.

DISSOLVE TO:

EXT. STONY BROOK UNIVERSITY, LONG ISLAND DAY

CAMERA moves in on building. We see SIGN identifying Stony Brook University.

CUT TO:

INT. LAUTERBUR'S LAB DAY

LAUTERBUR is on the phone with a close friend at the National Institute of Health, Edwin Becker, Ph. D.

INTERCUT conversation. Establish that Becker is at the NIH.

LAUTERBUR

I think I can get a three dimensional map, Edwin, if I use two gradients in sequence at right angles to each other.

BECKER

Interesting. Had a Russian fellow at the institute back in the fifties by the name of Kudrachev. Had a television background. He achieved some images with NMR.

LAUTERBUR

Images? What happened?

BECKER

I told him I didn't see a use for them. We already had X-ray.

CUT TO:

INT. EDITOR'S OFFICE, NATURE MAGAZINE - DAY

INTERCUT - TELEPHONE CONVERSATION between EDITOR and LAUTERBUR.

EDITOR

I'd like to publish your article, Paul, but I don't see an important application.

LAUTERBUR
 (cogitates)
 What if it could distinguish between
 malignant and normal tissue?

CUT TO:

CLOSE SHOT - COVER, NATURE MAGAZINE - DAY

The cover is dated March 16, 1973.

CUT TO:

INT. BROOKLYN COLLEGE, SCIENTIFIC MEETING - DAY

PULL BACK to show LAUTERBUR at the podium, holding the magazine, as he gives a talk. CAMERA Picks up sign on podium or in background, "Brooklyn College."

LAUTERBUR
 I acknowledge that it's only an image of
 two test tubes of water. But it is an NMR
 image.

ATTENDEE
 What do you call the technique?

LAUTERBUR
 Zeugmatography. I believe that at some
 point I'll be able to detect cancer with
 it.

ATTENDEE reacts.

CUT TO:

INT. DAMADIAN'S OFFICE - DAY

DAMADIAN at desk. INTERCUT - TELEPHONE CONVERSATION with
 ATTENDEE.

DAMADIAN
 No, I haven't seen the article.

ATTENDEE
 Well, you better read it, Ray. The author
 is here, talking about his imaging
 technique and leading people to believe
 he invented the whole idea of an NMR body
 scanner.

Damadian reacts.

CUT TO:

CLOSE SHOT - NATURE MAGAZINE, SAME ISSUE - DAY

CUT TO:

MEDIUM SHOT - DAMADAN ON PHONE - DAY

INTERCUT - TELEPHONE CONVERSATION between DAMADIAN and COPE.

DAMADIAN

I'm flabbergasted, Cope. Lauterbur doesn't credit me in his article. Only later researchers.

COPE

Do you know why?

DAMADIAN

He told someone he didn't have room. Can you believe it?

COPE

Welcome to reality, Ray.

DAMADIAN

He's taking credit for the gradient, too.

COPE

Everybody knows it was invented by Gabillard and Carr.

DAMADIAN

Do they?

CUT TO:

EXT. UNIVERSITY OF NOTTINGHAM, ENGLAND - DAY

CAMERA moves in on campus, picking up sign: "University of Nottingham."

DISSOLVE TO:

INT. CAFETERIA IN PHYSICS DEPARTMENT - DAY

It is June, 1972. PROFESSOR PETER MANSFIELD, an NMR specialist, is having breakfast with ALLAN GARROWAY, a postdoctoral associate, and PETER GRANNELL, a research student in his lab.

MANSFIELD

Seems to me we've done NMR studies on about every substance we can get our hands on. What else do you suppose it's good for?

GARROWAY

There must be something, Peter.

MANSFIELD

Ah, I just had a brainstorm. What if we apply gradients to the signal -- basically, do spatial imaging?

GARROWAY

I think another American, fellow named Lauterbur, has done some work on that.

MANSFIELD

I'll have to look into it.

DISSOLVE TO:

INT. MANSFIELD AT BLACKBOARD - DAY

MANSFIELD has covered the blackboard with mathematics to demonstrate that the use of the gradients could be used to study the distribution of atoms.

MANSFIELD

So, you see, gentlemen, it is feasible. But what in the world might it be good for?

REVERSE SHOT - GRANNELL

GRANNELL

Recently read about a fellow in America, a medical doctor named Damadian, who's been doing NMR experiments on tumors.

MANSFIELD

Tumors? Do you know if he used gradients?

GRANNELL

Not that I recall. But, of course, he's not an NMR specialist.

CUT TO:

INT. LAWYER'S OFFICE - DAY

LAUTERBUR with LAWYER

LAWYER

Did you ask the university for a release?

LAUTERBUR

Yes, I did. But I haven't pursued the matter.

LAWYER

Then you better stop working on the NMR machine there. You could compromise your rights.

LAUTERBUR

But I'm eager to move ahead. I've got funding from the National Cancer Institute to buy an NMR machine that's big enough to fit a human into.

LAWYER

Paul, do you want to apply for a patent or don't you? Damadian's already got one in the works.

LAUTERBUR

Of course, I want to. Oh, to hell with it.

CUT TO:

INT. LAUTERBUR'S LAB AT STONY BROOK - DAY

LAUTERBUR sits at his desk. CHING-MING LAI, an Asian graduate in physics from Stony Brook, sits across from him.

LAUTERBUR (CONT'D)

To be frank, Lai, I need someone to do the grunt work -- a lot of imaging, help with the mathematics. But the whole concept of a human scanner is big, very big. What do you think?

LAI

Count me in.

LAI smiles, stands, and shakes Lauterbur's hand.

INT. DINER - NIGHT

DAMADIAN is having dinner with MINKOFF and GOLDSMITH, two postdoctoral fellows who work in his lab. Larry Minkoff is a slim, high-strung young man, and Michael Goldsmith is portly and generally calmer. A GRANT APPLICATION is lying on the table. GOLDSMITH is reading another one.

MINKOFF

Apparently, they just don't get it.

DAMADIAN

"Meaningless" is what they call it.

GOLDSMITH

How can they call themselves the Health Research Council of the City of New York?

MINKOFF

(picks up other grant request)

What did the National Institutes of Health say?

DAMADIAN

What does it matter? They rejected the grant application, too.

MINKOFF

Do we have enough funding left to pay for dinner?

GOLDSMITH

(to Minkoff)

Hey, Larry, maybe you'll have to pay?

MINKOFF

Don't look at me, Mike. You pay.

GOLDSMITH

I have wife and kids to worry about.

MINKOFF

Who doesn't?

(to Damadian)

Got anymore ideas?

DAMADIAN

Nixon just launched his war on cancer. I'm going to send him a letter.

CUT TO:

INT. DAMADIAN'S LAB - NIGHT

He is writing a letter.

CUT TO:

CLOSE SHOT - LETTER

We see it is addressed to President Nixon. The text reads: "I sit here shaking my head in disbelief that the NIH has turned down the proposal.

As he writes, we hear his VOICE-OVER stating the last few words:

DAMADIAN (V.O.)
The rejection of my grant by the National Institutes of Health is a colossal stupidity.... I beg of you to intercede, Mr. Nixon...

CUT TO:

EXT. DAMADIAN AT MAILBOX - NIGHT

HE puts letter addressed to President Nixon in mailbox.

CUT TO:

INT. DAMADIAN HOME, BEDROOM - NIGHT

DAMADIAN is looking out the window. DONNA wakes up and sees him.

DONNA
Ray, come to bed.

DAMADIAN
I can't sleep. I can't believe I can't get my work funded. Doesn't anybody care about a new way to get at cancer?

DISSOLVE TO:

INT. DAMADIAN HOME - DAY

FLASHBACK:

Raymond is doing his homework. His mother enters.

MOTHER
Raymond, there's someone from the Juilliard School on the telephone for you.

Surprised, he gets up.

CUT TO:

INT. DAMADIAN HOME - DAY

DAMADIAN is on the telephone. INTERCUT conversation with FIRST MUSIC TEACHER.

DAMADIAN

Hello.

MUSIC TEACHER

Raymond, where have you been?

DAMADIAN

Home. Why?

TEACHER

How can we make up our minds about you if you don't come in for your final audition?

DAMADIAN

You want me to come back?

DISSOLVE TO:

INT. DAMADIAN'S LAB - DAY

DAMADIAN is at his desk, writing. PHONE rings. He picks up. A man from the NIH is on the other end.

INTERCUT - TELEPHONE CONVERSATION.

MAN FROM NIH

I suggest that you resubmit your grant request to the NIH.

DAMADIAN

Really? Is your call related to the letter I sent to President Nixon?

MAN FROM NIH

What would give you such an idea?

CUT TO:

EXT. DOWNSTATE MEDICAL CENTER - DAY

DELIVERY TRUCK backing up. DAMADIAN, MINKOFF, and GOLDSMITH observe.

CUT TO:

REAR OF TRUCK - DAY

MINKOFF is in the open delivery truck. DAMADIAN observes.

MINKOFF
(looking at huge packing
crate)
This thing is immense.

CUT TO:

INT. DAMADIAN'S LAB - NIGHT

DAMADIAN, MINKOFF, and GOLDSMITH are trying to break through the floor with a sledgehammer and chisel. Repeated blows. Yet they manage to do no more than open up a small whole.

MINKOFF
I give up. This thing is made of poured
concrete.

DAMADIAN
There's got to be a way.

CUT TO:

INT. DAMADIAN'S LAB - DAY

Two construction workers are breaking through the floor with jackhammers, as DAMADIAN, MINKOFF, AND GOLDSMITH look on.

CUT TO:

INT. LOWER LAB - DAY

DAMADIAN with book and pieces of wood for a staircase.

DAMADIAN
Geeze, I never realized building a
staircase is so difficult.

GOLDSMITH
It makes calculus look easy.

INT. DAMADIAN'S COMBINED LAB - DAY

DAMADIAN, MINKOFF, and GOLDSMITH are doing studies on cancer tissue, monitoring and recording the signals provided by the NMR machine.

GOLDSMITH

We should write a paper on these findings.

DAMADIAN

Soon, Mike. Right now, we need more cancer tissue. Can one of you make another run to Sloane-Kettering?

CUT TO:

CLOSE SHOT: MAGAZINE COVER - DAY

The April 1974 issue of *Proceedings of the National Academy of Sciences*. The report contains studies of twenty-eight different kinds of cancer tissue.

CUT TO:

WIDE SHOT - DAMADIAN, MINKOFF, AND GOLDSMITH - DAY

They're reading the article.

DAMADIAN

(holding up magazine)

I'm going to use our article to get us more funding.

CUT TO:

INT. DINER - NIGHT

DAMADIAN, MINKOFF, and GOLDSMITH are having dinner and, once again, grant applications are piled high on the table -- this time five of them.

GOLDSMITH

This is nuts! All five grant applications, turned down.

MINKOFF

Even the National Cancer Institute shot us down.

DAMADIAN

You'd think at least they'd be interested.

CUT TO:

INT. DAMADIAN'S HOME - NIGHT

HE and DONNA are having a bite.

DONNA

Why are you having so much difficulty?

DAMADIAN

I'm not a member of the NMR community, Donna. I'm an outsider, a medical doctor. I made the first discovery, and now they're just hoping I'll go away.

DONNA

What are you going to do?

DAMADIAN

I have to get to the American Cancer Society.

CUT TO:

INT. CHINESE RESTAURANT IN MANHATTAN - NIGHT

DAMADIAN and DONNA are having dinner with his sister and the owner, who is her Chinese father-in-law.

FATHER-IN-LAW

Raymond, I know somebody from the Cancer Society.

DAMADIAN

You do?

FATHER-IN-LAW

Yes, he used to come to my restaurant. I will try to arrange a meeting.

CUT TO:

INT. OFFICE - DAY

DAMADIAN is meeting with ELMER HOLMES BOBST, one of the founders of the American Cancer Society. Bobst is ninety-three years old and has hearing difficulty.

BOBST

I came up with the seven danger signs of cancer.

DAMADIAN

An important contribution, Mr. Bobst. Then certainly you understand --

BOBST

(interrupts, with wave of hand)

-- I'll do what I can.

DAMADIAN
(stands; shakes)
Thank you, sir. Thank you very much.

CUT TO:

INT. DAMADIAN KITCHEN - NIGHT

DONNA is having dinner with their two sons and daughter,
TIM, JEVAN, AND KEIRA.

DAMADIAN
Hi, children. Homework done?

TIM
I could use some help with math.

DAMADIAN
Good news! The American Cancer Society is
sending two scientists to evaluate my
work.

DONNA
Oh, that sounds wonderful, dear.

CUT TO:

INT. DAMADIAN'S LAB - DAY

DAMADIAN is showing the two SCIENTISTS the NMR machine
and the paper he wrote about his results.

FIRST SCIENTIST
Quite impressive, Damadian.

SECOND SCIENTIST
Yes, it is. I'm prepared to recommend
funding.

CUT TO:

INT. DAMADIAN'S OFFICE - DAY

DAMADIAN hangs up phone. CUT BACK to pick up GOLDSMITH
and MINKOFF.

DAMADIAN
Incredible! We're not getting the money.

GOLDSMITH
What happened?

DAMADIAN

The guy who didn't like our work in the first place --

GOLDSMITH

-- Yeah?

DAMADIAN

Apparently was unhappy about the positive review -- and had someone else review the review. Guess who he picked? A friend of Lauterbur's. And what do you think he said?

GOLDSMITH

Let's hear it.

DAMADIAN

He said our work is -- and I quote -- "ridiculous." I'm beginning to feel imprisoned -- with Lauterbur as the warden.

DISSOLVE TO:

INT. JUILLIARD AUDITION ROOM - DAY

FLASHBACK:

SECOND MUSIC TEACHER and DAMADIAN, both with violins.

SECOND MUSIC TEACHER

Now, I will play part of a well-known piece and I want you to continue it.

DAMADIAN

What if I don't know the piece, sir?

SECOND MUSIC TEACHER

I just want you to play whatever comes to you.

SECOND MUSIC TEACHER plays a few notes of the melody. Then he gestures to DAMADIAN, who begins to play. He continues to play, making up the piece as he goes along. The Second Music Teacher is impressed.

SECOND MUSIC TEACHER

(CONT'D)

Keep going, keep going.

The Second Music Teacher goes out of the room and soon returns with the FIRST MUSIC TEACHER and couple of OTHER TEACHERS. DAMADIAN stops.

SECOND MUSIC TEACHER
(CONT'D)

You've got to hear this child play. Go on, Raymond. Please, continue.

Damadian starts to play again. The THREE TEACHERS smile and nod with approval.

DISSOLVE TO:

INT. LAUTERBUR'S HOME - DAY

LAUTERBUR is having dinner with his WIFE and nine-year-old DAUGHTER.

LAUTERBUR

I want to do an image of a living creature.

WIFE

What's stopping you?

LAUTERBUR

The space inside the magnet is only about this big.

(holds up index finger and thumb to indicate a distance of about four millimeters)

So not a lot of creatures fit into it.

DAUGHTER

Why don't you use a wee little clam?

LAUTERBUR

I would need a very wee little one.

DAUGHTER

Bet I can find one at the beach for you.

CUT TO:

INT. HOLLIS'S LAB AT JOHNS HOPKINS - DAY

HOLLIS with ECONOMOU.

HOLLIS

It can't even distinguish between different kinds of malignancies, Jim.

ECONOMOU

What does that matter? We can detect them. That's the purpose. That's what Damadian's all about.

HOLLIS

I hear he can't even get funded. He writes all these outrageous things. No wonder he gets laughed at.

INT. DAMADIAN HOME - NIGHT

DAMADIAN, DONNA, and the THREE CHILDREN are having dinner.

DONNA

You see things, dear, and assume that other people are as far-sighted as you are.

DAMADIAN

What am I supposed to do, Donna, play stupid?

KEIRA

That's weird, Daddy. How can you play stupid?

JEVAN

What can you do, Dad?

DAMADIAN

What I've always done. It's the only thing I know how to do.

(smiles)

Once Beethoven said, "Beethoven can write music, thank God. Because Beethoven can't do anything else."

DISSOLVE TO:

EXT. TERRY HOUSE - PORCH

DAMADIAN and DONNA.

DAMADIAN

I'm going to graduate from medical school soon. I thought maybe I'd become a missionary.

DONNA

As a nurse, I've considered that calling too.

DAMADIAN

I also thought maybe we'd get married.

DONNA

I've been waiting for you to pop that question.

THEY kiss.

DISSOLVE TO:

INT. DAMADIAN'S HOME - NIGHT

DAMADIAN is on the phone with FREEMAN COPE. INTERCUT - TELEPHONE CONVERSATION.

COPE

I told you, Ray, think smaller.

DAMADIAN

I tried that. Then I come back and say, "Okay, Freeman, this small enough?" And you say something like, "Are you crazy? Your eyes are still too big."

COPE

Well, maybe it's time for you to change.

DAMADIAN

Cope, my brain just doesn't work that way.

CUT TO:

INT DAMADIAN'S LAB - DAY

DAMADIAN, MINKOFF, and GOLDSMITH are working at the NMR machine.

MINKOFF

Everybody else is getting funded but us. Not just here -- globally. The Japanese, the Swiss, the English, the Russians -- now they're all doing work on medical NMR.

GOLDSMITH

Even The National Bureau of Standards managed to detect a tumor in a mouse.

DAMADIAN

Once I was innocent. I thought you made a discovery, you got credit.

CUT TO:

INT DAMADIAN HOME - DAY

Family dinner. DAMADIAN, DONNA, TIM, JEVAN, KEIRA, along with DAMADIAN'S FATHER and his BROTHER-IN-LAW, DAVE TERRY.

FATHER

What are you going to do, son?

DAMADIAN

I've made a decision. I'm going to pass the tin cup.

TERRY

How?

DAMADIAN

I'm setting up a foundation, David.

FATHER

That's my Raymond, the Armenian Einstein.

TERRY

What kind of foundation?

DAMADIAN

I'm calling it The Citizens' Campaign for New Approaches to Cancer. I plan to raise huge amounts of money -- and not just for myself. For all people doing cancer research. I need your help, Dave.

TERRY

Maybe I can get my cousin, Dan Culver, to pitch in.

DISSOLVE TO:

EXT. FLEA MARKET - DAY

DAVE TERRY and DAN CULVER are standing behind a table with a large glass bowl on it. Behind him is a sign that says "Donate to Wipe Out Cancer." There are only a few dollars in the bowl.

CUT TO:

INT. TWO SHOT - DAMADIAN AND TERRY - DAY

DAMADIAN

How much have we got?

TERRY

Maybe a hundred bucks.

CULVER

And even that was tough to get.

CUT TO:

INT. FUNERAL HOME - NIGHT

TERRY with bereaved person.

TERRY
Would you care to give something in
memory of the deceased?

CUT TO:

EXT. ST. PATRICK'S DAY PARADE - DAY

A float with a big green shamrock on it, the initials
"CCNAC" and the slogan: "Donate to Wipe Out Cancer."
TERRY and CULVER are waving from it.

CUT TO:

INT. TWO SHOT - DAMADIAN AND TERRY - DAY

TERRY
(holds up money)
We got two thousand.

DAMADIAN
From the parade?

TERRY
Naw. My father kicked in a thousand, and
my uncle kicked in the other one.

CUT TO:

INT. DAMADIAN'S LAB - DAY

MINKOFF AND GOLDSMITH are at the NMR machine. DAMADIAN
comes in with paper.

DAMADIAN
Great news!

MINKOFF
I could use some.

DAMADIAN
The patent issued.

CUT TO:

REVERSE SHOT - PATENT

We see the original patent drawing of a man standing in a magnet with a coil wrapped around him. It reads: "United States Patent No. 3,789,832. Apparatus and Method for Detecting Cancer in Tissue. Inventor: Raymond V. Damadian."

GOLDSMITH

Great, Dr. Damadian! You own it. Nobody can ever take it away from you.

DAMADIAN

I tell you, I can feel the hand of the Lord in this.

GOLDSMITH

Your detector for that is a little better than mine. But I did detect this.

(holds up newspaper)

The National Institute of Health is going to award a two-year grant to three scientists to study NMR for cancer detection.

DAMADIAN

We have to get in on that.

MINKOFF

There'll be a ton of applicants.

DAMADIAN

How can they exclude us?

MINKOFF

They seem to have been doing a pretty good job of it so far.

CUT TO:

INT DAMADIAN HOME - NIGHT

DAMADIAN at dinner with DONNA, TIM, JEVAN, and KEIRA.

DAMADIAN

I could get tens of thousands of dollars for two years running. Do you know what I could do with that?

TIM

What, Dad?

DAMADIAN

Well, Timmy, let me put it this way. When you grow up, maybe you won't have to worry about getting cancer without anybody even knowing you have it. And if we can see it, we have a better chance of treating it.

CUT TO:

INT. DAMADIAN'S LAB - DAY

DAMADIAN enters with grant.

DAMADIAN

Larry, Mike, we got the grant!

MINKOFF

We did?

DAMADIAN

Yeah, and guess what? More than anybody else.

GOLDSMITH

More? How much?

DAMADIAN

A hundred thousand.

MINKOFF

Amazing! Who else got funded?

DAMADIAN

Donald Hollis at Johns Hopkins got seventy-five thousand, and Carleton Hazelwood at Baylor College of Medicine got fifty.

MINKOFF

What about Lauterbur?

DAMADIAN

He didn't get anything, for once.

CUT TO:

INT. CAFETERIA - DAY

DAMADIAN is sitting at a table with a few surgeons, addressing them as they eat. A graduate student, KEN ZANER, is beside him.

DAMADIAN

I need the tumors you excise before you put them on ice or dunk them in formaldehyde.

Skeptical smiles.

FIRST SURGEON

What for, Ray? To study them with magnets?

Surgeons have a good laugh.

CUT TO:

INT. HALLWAY AT DOWNSTATE MEDICAL - DAY

DAMADIAN and ZANER are walking down the hall.

DAMADIAN

Can you believe it, Ken? I can't even get cooperation at our own institution. They think we're doing voodoo medicine.

CUT TO:

INT. DAMADIAN'S DESK - DAY

DAMADIAN is opening his mail. He opens a letter from the National Institute of Health. He puts his hand to his forehead. MINKOFF enters.

MINKOFF

Uh-oh, what's up?

DAMADIAN

There's a meeting coming up of all the scientists with grants from the NIH. Guess who they picked to talk about NMR and cancer?

MINKOFF

I assume it would be you.

DAMADIAN

Hollis.

MINKOFF

Are you even going?

DISSOLVE TO:

INT. MEETING, NATIONAL INSTITUTE OF HEALTH - DAY

A gathering of about 200 scientists. DAMADIAN is in the audience. HOLLIS is speaking.

HOLLIS

In conclusion, any further discussion of scanning the human body by NMR is visionary nonsense.

Meeting erupts into applause, as if it's the expression of long pent-up skepticism.

CUT TO:

SAME - LATER

The gathering is breaking up. DAMADIAN is on his way out. A scientist comes up to him.

SCIENTIST

Hey, Raymond.

DAMADIAN

What?

SCIENTIST

That was your discovery. Why didn't you give the lecture?

DAMADIAN

I wasn't asked.

CUT TO:

INT. DAMADIAN'S LAB - DAY

He enters. MINKOFF is at the NMR machine.

MINKOFF

How'd it go?

DAMADIAN

I was sitting in the audience, listening to somebody else talking about my discovery. Can you imagine? All Hollis did is copy me. I almost went crazy. It's the most outrageous thing that ever happened to me.

MINKOFF

Give it time. I'm sure worse is possible.

CUT TO:

INT. MEETING AT NATIONAL INSTITUTE OF HEALTH - DAY

Bethesda, MD. The two-year grant is coming to an end, and DAMADIAN, HAZELWOOD, and HOLLIS have come to the NIH to report their findings. They are seated before a REVIEW PANEL, made up of two physicians, a chemist, a pathologist, and chaired by DR. EDWIN BECKER.

BECKER

Dr. Hazelwood?

HAZELWOOD

I'm hopeful about NMR. I feel it's useful in complementing the pathologist in the detection of cancer and the classification of cancer. I'm particularly hopeful about it in the detection of breast cancer.

BECKER

Thank you. Dr. Damadian?

DAMADIAN

I'd like to thank Dr. Hazelwood for his report and tell you that we've been able to develop a malignancy index that allows us to discriminate, with satisfactory reliability, between normal tissue and tumors of the breast, spleen, skin, and lymph nodes.

BECKER

(seems a bit dismissive)

Interesting. Dr. Hollis?

HOLLIS

Contrary to Damadian's findings, my research at Hopkins has convinced me that further research along these lines is leading to a barren destination. In short, I've concluded that it's all a scientific wild goose chase.

DAMADIAN

(red with fury; to Hollis)

You're setting back science by ten years! If you don't believe in this, you ought to get out of the field.

HOLLIS
I like this field, and I'll get out of it
when I feel like it.

CUT TO:

INT. DAMADIAN HOME - NIGHT

DAMADIAN and DONNA are sitting in the living room. He's reading the Bible but is fretting.

DONNA
What's wrong, dear?

DAMADIAN
I'm concerned that my grant from the NIH
won't be renewed.

DONNA
I thought you said the panel liked your
work.

DAMADIAN
They did. But Edwin Becker, the
chairman, is joined at the hip with
Lauterbur.
(reads from Bible)
James says, "Humble yourselves in the
sight of the Lord, and he shall lift you
up." I'm waiting for that to happen.

CUT TO:

INT. NATIONAL INSTITUTES OF HEALTH - DAY

Meeting of the REVIEW PANEL.

FIRST SCIENTIST
I would recommend that Damadian's
contract be either renewed or extended.

BECKER
(to other scientist)
What's your thinking?

SECOND SCIENTIST
It would be a crime for the Diagnostic
Branch to stop support after being quite
forward-looking.

BECKER
(to third scientist)
What's your conclusion?

THIRD SCIENTIST

Obviously, there are many problems to overcome. Nonetheless, the technique appears to me to have great potential, particularly for screening, and I think it would be quite premature for the Diagnostic Branch to drop support.

BECKER

I'm afraid my assessment is less sanguine. While further development is, I think, a very worthwhile objective, Damadian started late --

FOURTH SCIENTIST

-- He did? My understanding is that he initiated the field.

BECKER

Furthermore, his results are not very impressive. I personally believe his approach is less likely to be successful and efficient than those already being developed elsewhere.

FIRST SCIENTIST

But he --

BECKER

-- may move ahead rapidly. And I would favor his continuing work for another year or so, but I can't see why it should be funded by the Diagnostic Branch in preference to the work being done by Lauterbur and others.

CUT TO:

INT. DAMADIAN'S LAB - DAY

DAMADIAN with letter from the NIH. MINKOFF, GOLDSMITH, and KOUTCHER are listening.

DAMADIAN

(reads)

"Damadian's study of non-proton NMR should not be supported by DB. His development of imaging techniques should continue, but whether with DB support is questionable."

(looks up)

I knew it was coming. I just knew it.

KOUCHER

What are you going to do?

DAMADIAN

I'm not going to stand for it, Jason.

MINKOFF

That's easy enough to say but --

DAMADIAN

-- There's a new head of the diagnostics review committee at the National Cancer Institute. I'm going to try to get a meeting with him.

DISSOLVE TO:

INT. DR. EDWARD POMERANCE'S OFFICE - DAY

DAMADIAN

But, Doctor Pomerance, I thought certainly the National Cancer Institute would --

POMERANCE

-- Let me be blunt, Damadian. Your contract probably won't be renewed.

CUT TO:

INT. DAMADIAN'S OFFICE - DAY

DAMADIAN is on the PHONE with his congressman from Queens, JOSEPH ADDABBO.

DAMADIAN

I don't know where else to turn, Congressman Abbaddo.

ABBADDO

Tell you what. I'll assign an attorney to tackle the case.

DISSOLVE TO:

INT. LUDWIG EICHNA'S OFFICE - DAY

FLASHBACK:

EICHNA is the dean of Downstate Medical. He is meeting with Damadian, when he is an intern.

EICHNA

What are you going to do after you finish your internship?

DAMADIAN

I plan to become a medical missionary.

EICHNA

But you have a special talent for research. I'm prepared to recommend you for postdoctoral study at Harvard.

DAMADIAN

Thank you, Dr. Eichna, but --

EICHNA

-- Think how many more people you can help if you make a medical advance than you can by treating one patient at a time.

DISSOLVE TO:

EXT. PARK - DAY

DAMADIAN is walking with DONNA.

DAMADIAN

What do you think, Donna?

DONNA

I think you should follow your heart.

DAMADIAN

What about you?

DONNA

I'm busy enough being a nurse. And I thought you should know, dear. Soon we're both going to have a little more responsibility.

Taps her tummy to indicate she's pregnant.

DISSOLVE TO:

INT. OFFICE - NATIONAL CANCER INSTITUTE - DAY

DAMADIAN is meeting with the HEAD of the National Cancer Institute.

HEAD OF NCI

Dr. Damadian, as you might guess, we don't look very kindly on undue political influence. But, be that as it may, we're prepared to provide an additional funding of twenty-five thousand dollars.

DAMADIAN

I appreciate that. But it's not nearly enough to exploit the potential of the technology.

HEAD OF NCI

All right, all right, Damadian. I'll stick my neck out and see what I can do to fund you for another year at, say, an additional \$150,000.

CUT TO:

INT. DAMADIAN'S LAB - DAY

HE is sitting at his desk. Opens mail. Flies into a rage. Gets up and heads for NMR machine, where MINKOFF and GOLDSMITH are at work.

DAMADIAN

It's scandalous! I tell you, it's scandalous!

MINKOFF

What is?

DAMADIAN

The hundred-and-fifty thousand from the National Cancer Institute has been cancelled.

CUT TO:

INT. DAMADIAN HOME - NIGHT

He is on the PHONE with an official of the NCI. INTERCUT - TELEPHONE CONVERSATION.

DAMADIAN

How could you do this to me? You're supposed to be The National Cancer Institute!

NCI OFFICIAL

Dr. Damadian, I'm playing Chinese checkers with my daughter, and I do not wish to be disturbed. Goodbye.

(hangs up)

CUT TO:

INT. DAMADIAN HOME - NIGHT

He returns to the living room.

DONNA

Did you get through to him?

DAMADIAN

He does not wish to be disturbed. Apparently, the cancer establishment doesn't want this machine to happen. It might get rid of the disease.

CUT TO:

INT. MINKOFF'S OFFICE - DAY

MINKOFF is on the PHONE with KEN OLSON. INTERCUT - TELEPHONE CONVERSATION.

MINKOFF

But, Ken, why are we having so much trouble?

OLSON

Larry, I like Damadian very much. But he's vitriolic. If people don't understand him right away, he thinks they're stupid. In short, the man has a temper.

MINKOFF

Maybe he wouldn't be vitriolic if people would listen to him.

OLSON

Don't you get it? Physicists had this technology for over thirty years and didn't think of the idea. Then along comes Damadian.

MINKOFF

Aren't you glad somebody did?

OLSON

That's not the point. If you miss the boat, you aren't likely to cheer for the guy who didn't.

MINKOFF

You want to know what I think? I think there may be a prejudice against Downstate.

OLSON

Oh, it's a fine institution, but face it. It doesn't exactly have the reputation for physics of Harvard or the University of Chicago.

MINKOFF

Damadian spent two years doing his postdoc in biophysics at Harvard. That should count for something, right?

OLSON

-- Yeah, yeah, yeah. Larry, you know how you can tell a pioneer, don't you? He's the guy with arrows in his back.

CUT TO:

INT. DAMADIAN'S LAB - DAY

CLOSE SHOT - MOUSE. DAMADIAN is anesthetizing it.

DISSOLVE TO:

CLOSE SHOT - SLEEPING MOUSE

DAMADIAN slips small receiver coil around it.

CUT TO:

WIDE SHOT - DAMADIAN, MINKOFF, AND GOLDSMITH

DAMADIAN moves mouse toward NMR machine.

DAMADIAN

Keep your fingers crossed for Pioneer Mouse number one.

CUT TO:

CLOSE SHOT - DAMADIAN AT NMR

He is turning up the dial, putting more power into the coil.

DAMADIAN

Un-oh.

GOLDSMITH

What happened?

DAMADIAN

I cooked the mouse.

DISSOLVE TO:

INT. DAMADIAN'S LAB - NIGHT

MINKOFF is working at the NMR machine and recording the results. GOLDSMITH enters.

GOLDSMITH
Larry, you've had that poor mouse in there for four hours.

MINKOFF
But I'm getting an image.

GOLDSMITH
You are?

MINKOFF
Crude, but here's the data. Let's reconstruct it with the computer and see what we have.

CUT TO:

INT. DAMADIAN'S LAB - NIGHT

MINKOFF, GOLDSMITH, and DAMADIAN are gathered around a computer screen. At the very bottom, we see an image that looks like an orange-pink and red region that seems like a hazy, multicolored Christmas ball.

DAMADIAN
You got it, Larry! Great work!

MINKOFF
Such as it is. But I think we're in luck. The editor of Science told me he's looking for something appropriate for the Christmas cover.

CUT TO:

CLOSE SHOT - COVER OF SCIENCE MAGAZINE

The image is featured on the December 24, 1976 issue.

CAMERA pulls back. DAMADIAN, MINKOFF, and GOLDSMITH with the magazine.

MINKOFF
Looks pretty good, wouldn't you say?

DAMADIAN
I have no more doubts about the explosive potential of this technology.
(MORE)

DAMADIAN (CONT'D)

It can open a window into the human body sharper and more revealing than any detector of disease yet invented.

MINKOFF

What do you think we should we do next?

DAMADIAN

A bigger animal.

GOLDSMITH

How big?

DAMADIAN

How about a monkey? It's the next logical step.

GOLDSMITH

We can't fit a monkey into this machine.

DAMADIAN

We'll get a bigger one.

MINKOFF

How?

DAMADIAN

Don't ask questions. Give me answers.

DISSOLVE TO:

INT. JUILLIARD SCHOOL - DAY

FLASHBACK:

DAMADIAN is now sixteen years old. He is with the FIRST VIOLIN TEACHER and holds his violin case.

DAMADIAN

I have to ask you something, Doctor McKinley.

MCKINLEY

What is it, Raymond?

DAMADIAN

I just won a Ford Fellowship.

MCKINLEY

You did? In what?

DAMADIAN

Mathematics.

MCKINLEY

Is that so?

DAMADIAN

Yes, sir. I've always liked math and science. It comes with a fully paid scholarship to the University of Wisconsin. Do you think I should continue with my musical education or take the scholarship?

MCKINLEY

Hmm, that's a big decision, Raymond. Only a handful of people can make a living with the violin. Even fewer can do so as soloists. All things considered, I think you should accept it.

DISSOLVE TO:

INT. DAMADIAN'S LAB - DAY

DAMADIAN, MINKOFF, and GOLDSMITH at a new and larger NMR machine. It's a brooding presence that is six-feet tall.

DAMADIAN

Larry, where's the monkey?

MINKOFF

It's supposed to be in the machine.

GOLDSMITH

Then why aren't we getting a signal.

MINKOFF

Maybe something's wrong with the equipment.

(looks in orifice)

Hey, the monkey's gone.

DAMADIAN

Where could it possibly go?

MINKOFF

(looks up)

How about up there?

MINKOFF points up. REVERSE SHOT - MONKEY. The monkey has extracted itself from the coil and is sitting on top of the machine, with its arms folded across its chest, looking at MINKOFF as if he's an idiot.

DISSOLVE TO:

INT. DAMADIAN'S LAB - NIGHT

MINKOFF, GOLDSMITH, and DAMADIAN at the computer.

MINKOFF

Let's do a paper. We can make the monkey a coauthor.

DAMADIAN

We've done enough with animals. It's time to move on to scanning the human body.

GOLDSMITH

Where are we going to get a magnet that big? No one has ever seen anything like that?

MINKOFF

Besides, we're broke, aren't we?

DAMADIAN

We can't buy it. We're going to build it.

MINKOFF

From scratch?

CUT TO:

INT. MEETING OF SCIENTISTS - DAY

DAMADIAN

In short, I propose to build an NMR scanner that will be big enough to accommodate a human being.

SCIENTIST

Dr. Damadian, certainly you know that when a test-tube sample is put in an NMR machine, it spins at something like a hundred rotations a minute.

DAMADIAN

Of course, I know that.

SCIENTIST

Then can you tell us, how fast do you plan to spin the patient?

The group has a hearty laugh.

CUT TO:

INT. DAMADIAN BEDROOM - NIGHT

DAMADIAN, lying awake. DONNA stirs.

DONNA

Can't sleep?

DAMADIAN

No.

DONNA

What's wrong?

DAMADIAN

I'm beginning to wonder if we're going to be the first ones to make an image. At best, I'd say we have a fifty-fifty chance.

DONNA

Why?

DAMADIAN

We're underfunded, Donna. Meanwhile, the NMR boys are well-funded and racing ahead.

DONNA

Can they really catch up with you?

DAMADIAN

I don't know. Lauterbur has the funding to buy a magnet that's big enough to fit a human body into. And Mansfield recently got a pretty good image of a human finger, which he published in the British Journal of Radiology.

DONNA

A finger?

DAMADIAN

He's also got enough funding to buy a magnet that's big enough to fit a human into, too.

CUT TO:

INT. LAUTERBUR'S LAB - DAY

A YOUNG SCIENTIST has taken delivery of a large magnet, which has been unpacked. He takes a tape measure and puts it across the bore. Alarmed, he rushes off.

CUT TO:

INT. LAUTERBUR'S OFFICE - DAY

LAUTERBUR is at his desk. The YOUNG SCIENTIST enters.

YOUNG SCIENTIST

Paul, the magnet came and it's not big enough!

LAUTERBUR

(stands)

Oh, come on, of course it's big enough.

CUT TO:

INT. LAUTERBUR'S LAB - DAY

LAUTERBUR and the YOUNG SCIENTIST at the magnet.
LAUTERBUR takes the measurement of the bore. His jaw
drops.

LAUTERBUR

Oh, my, God! The bore is only sixteen
inches. Walker Scientific revised the
plans.

SCIENTIST

What are you going to do? It's supposed
to be roughly twenty-four.

LAUTERBUR

Order another one, asap.

CUT TO:

INT. DAMADIAN'S LAB - DAY

DAMADIAN and MINKOFF.

DAMADIAN

What gets me upset is traveling around to
meetings and everyone is talking about
zeugmatography, and I'm not getting
mentioned at all. I hear it and I split a
gut.

MINKOFF

I don't think we have to worry about
Lauterbur for a while.

DAMADIAN

If I were him, I'd put a midget in it.

MINKOFF

How about a kid? I'm sure he's thought
about that.

DAMADIAN

Exactly. So I'm doubtful that he has the
capability to do a live human, even when
he gets a larger magnet.

MINKOFF

Don't underestimate him. He's got postdocs over there. Maybe one of them can do it.

DAMADIAN

I'll die before I let him beat me. But right now, I'm more concerned about the British. I'm sure they have the capability.

MINKOFF

Well, at least, we know we don't want to come in second.

CUT TO:

INT. MOVIE THEATER - DAY

DAMADIAN with DONNA and the three children are at a movie.

DOCUMENTARY SHORT about scientific events of note: the first transatlantic flight of a balloon; a single-man airplane that the pilot pedals. Then the documentary cuts to a young woman scientist, identified as working at The Baylor School of Medicine. She is hunched over an oscilloscope.

NARRATOR (V.O.)

She's working at The Baylor School of Medicine on her exciting and far-reaching discovery -- the application of nuclear magnetic resonance, known as NMR, to detect cancer.

DAMADIAN reacts, shocked. DONNA and children look at him.

TIM

Daddy, I thought that was your discovery?

DAMADIAN

(pats his son's hand)
It was, Timmy, it was.

CUT TO:

INT. DAMADIAN'S LAB - DAY

DAMADIAN and GOLDSMITH.

DAMADIAN

I need you to work on the big magnet.

GOLDSMITH

No, no -- the name of the game is getting papers out. And we've done the research. I need the credentials. I'm a PhD, not an M. D. I can't go into private practice like you. And I'm thinking about having a family.

DAMADIAN

Let Jason do th first paper. You can do the followups. The heart of the human-scanner team has to be you, Minkoff, and me.

GOLDSMITH

Why me?

DAMADIAN

You're only here once, Mike. Do the biggest, most important thing you can.

DISSOLVE TO:

INT. DAMADIAN HOME - DAY

FLASHBACK:

DAMADIAN is with his son, JEVAN. Both have violins. There is a music stand in front of them. Jevan finishes playing Bach's "Jesu, Joy of Man's Desiring."

DAMADIAN

Excellent, Jevan. Now, let's see if we can play it together.

They begin to play in unison. We hear a bit of the tune and then we ...

CUT TO:

INT. CALVIN PLIMPTON'S OFFICE - DAY

PLIMPTON, the president of Downstate University, is at his desk. DAMADIAN is sitting across from him.

PLIMPTON

What kind of magnet are you going to build, Ray?

DAMADIAN

The biggest one I can dream of building. A five-thousand-gauss superconducting magnet. One of the biggest in the world.

PLIMPTON

How are you going to manage that?

DAMADIAN

I don't know, Calvin. I never built a magnet before. But I need more space.

PLIMPTON

I don't know where to put you.

DAMADIAN

What about the rats' quarters just across the hall from me? They're going to be relocated, aren't they?

PLIMPTON

Yes, but another professor is gunning for the space.

DAMADIAN

Trust me. Nobody needs it more than I do.

CUT TO:

INT. DAMADIAN'S LAB - NIGHT

DAMADIAN has a sledgehammer and he is breaking down the wall to the rats' quarters. Goldsmith is standing by with a jackhammer. A couple of carpenters are eyeing the proceedings.

CUT TO:

INT. DAMADIAN'S LAB - DAY

DAMADIAN approaches GOLDSMITH and MINKOFF with a computer disk.

DAMADIAN

I got hold of a computer program we can design the magnet with.

MINKOFF

Where did you get that?

DAMADIAN

I called Brookhaven and asked for it.

CUT TO:

INT. DAMADIAN'S LAB - DAY

DAMADIAN, MINKOFF and GOLDSMITH are leaning over a computer screen.

JOEL STUTMAN -- a kindly, smiling, gentle computer expert with a narrow face and penetrating gaze -- is at the computer. He turns to them.

STUTMAN

You'll need two hoops, fifty-three inches in diameter, each made up of thirty miles of niobium-titanium superconducting wire.

MINKOFF

Where are we going to get that?

STUTMAN

Actually, you'll need twice that amount.

DAMADIAN

Why, Joel?

STUTMAN

One imperfection and the signal will drift. So you won't get an image.

DAMADIAN

Let's say we get the wire. How much field strength will the magnet have?

STUTMAN

What you want. But it won't be the largest in the world. It will be the ninth largest.

GOLDSMITH

Who else needs magnets this big?

STUTMAN

They're used in particle accelerators to split atoms. I can tell you this, though. The supports will have to be strong.

DAMADIAN

How strong?

STUTMAN

The attractive force between the two hoops will be sixty tons. You don't want them slamming together while a patient's in there.

CUT TO:

INT. DAMADIAN'S LAB - DAY

DAMADIAN is on the phone with STEVE LANE, the physicist in charge of the superconducting magnet division at Westinghouse. CAMERA picks up Westinghouse identity.

LANE

I have a hundred and fifty thousand feet.

DAMADIAN

How much does it cost?

STEVE

You're in luck. Westinghouse is getting out of the supercon wire business. Normally, it would go for about a dollar per foot. But I can let you have it for ten cents a foot.

DAMADIAN

(quick mental calculation)

I can't believe it, Steve! That's exactly how much money I have. I'll send my team with a U-Haul.

CUT TO:

INT. DAMADIAN'S HOME - NIGHT

Family Dinner. His mother-in-law, AMY TERRY, is there.

AMY

Don't worry, Raymond. We're all praying for you.

DONNA

That's so sweet, Mom.

DAMADIAN

It must be working, Amy. Wait till you hear about the deal I got from Westinghouse.

CUT TO:

INT. DAMADIAN'S LAB - DAY

DAMADIAN, GOLDSMITH, and MINKOFF.

DAMADIAN

Larry and I will build the dewars to hold the liquid helium and nitrogen.

(to Goldsmith)

You'll be in charge of the building the magnet.

GOLDSMITH

But my knowledge of electronics is virtually nil. I can barely turn on a light.

DAMADIAN

Start small and go from there. A good scientist solves problems wherever they take him.

CUT TO:

INT. MONTAGE - MAGNET BEING BUILT - DAY/NIGHT

GOLDSMITH winding wires to make a small superconducting magnet, roughly four inches by two inches; it works. He builds one about a foot high and eight inches across. That one works, too.

DAMADIAN gestures that it's time to think bigger.

DAMADIAN and MINKOFF driving away from JANUS RESEARCH outside of Boston with two gigantic rolls of channel bar lashed to the roof of a rental car.

GOLDSMITH at the Brooklyn Navy Yard, where lathes were once used to build battleships, is getting help to form the two hoops of the magnet, each five feet in diameter.

GOLDSMITH starting to fabricate a winding machine for the wire, as DAMADIAN pushes in a black-metal bookcase to serve as a rack for it.

DAMADIAN, GOLDSMITH, and MINKOFF cruising the bargain stores and bins of Chinatown on Canal Street, looking for bargains. They find a metal saw and a box of small motors.

THREE of them in the lab, using the motors to create a Rube Goldberg apparatus to spin the hoops to wind the wires. The wire goes through a thimble to guide it. MINKOFF reveals a small counter to keep track of the revolutions.

GOLDSMITH attempts a KOLD WELD to join two spools of wire and, to his surprise, succeeds. DAMADIAN congratulates him.

SCIENTIST pokes head in. Observes the madness.

SCIENTIST

Now, here we have some people who need a vacation.

GOLDSMITH

Why? We're only working seven days a week.

INTERCUT SHOTS of the team eating - in the CAFETERIA, at an inexpensive CHINESE RESTAURANT, at NATHAN'S in CONEY ISLAND.

GOLDSMITH (CONT'D)

I think we should try to do something less heroic, just as an intermediate step.

DAMADIAN

Like what, Mike?

GOLDSMITH

What if we do an arm and, if all goes well, we publish an article.

DAMADIAN

I'm not about to go to the American public and say, "Hey, ladies and gentlemen, look what we've got -- an arm."

DAMADIAN and MINKOFF, working on the dewars -- each a donut-shaped item about ten feet tall, six feet wide, and eighteen inches deep, weighing one-and-a-half tons. There are three for each side, one donut fitting inside the other; these will eventually create a thermos-like effect.

SHOT of DAMADIAN and MINKOFF with Nean Hu, their Chinese machinist.

DAMADIAN (CONT'D)

No leaks, Nean. We need to create a vacuum.

MINKOFF

That stays a vacuum at minus 269 degrees or lower.

GOLDSMITH and GRADUATE STUDENTS, winding and welding.

GOLDSMITH

I'm beginning to feel that this is like building the pyramids.

FIRST GRADUATE STUDENT

And it looks like it's going to take about as long.

SECOND GRADUATE STUDENT

What if somewhere in here there's a bad piece of wire or a bad joint?

GOLDSMITH

We'll figure out something. Just keep winding.

GOLDSMITH takes out Kierkegaard's *Fear and Trembling* and starts reading where he has a bookmark.

DAMADIAN enters.

DAMADIAN
What are you reading that for?

GOLDSMITH
I like the theme. Absolute irrational
faith.

CUT TO:

INT. DAMADIAN'S LAB - NIGHT

GOLDSMITH is checking the wires with an ohmmeter. When he spots a short, it's on the special plate he created for the welds, and he goes to work on it.

CUT TO:

INT. DAMADIAN'S LAB - NIGHT

GOLDSMITH and some graduate students begin to wrap the magnets with insulation. DAMADIAN enters.

DAMADIAN
How's it coming, Mike?

GOLDSMITH
Believe it or not, the magnet is almost
done.

DAMADIAN
Fantastic! Congratulations.

GOLDSMITH
What about the dewars?

DAMADIAN
We're being plagued by leaks.

GOLDSMITH
In the welds?

DAMADIAN
Even in the sheets of aluminum.

CUT TO:

INT. SYMPOSIUM - DAY

It is the summer of 1976. We are at a symposium of medical researchers at Tilton, New Hampshire. LAUTERBUR is speaking. He has a slide on the screen of a tumor in the chest of a mouse.

LAUTERBUR

We've made significant progress in the medical applications of NMR. Here we see an image of a tumor in the chest of a mouse. I also have here a detailed image of a green pepper.

Changes slide to show GREEN PEPPER.

CUT TO:

SAME SYMPOSIUM - DAY

LAUTERBUR, during a break, is being questioned by another scientist.

SCIENTIST

Excellent, Dr. Lauterbur.

LAUTERBUR

Thank you.

SCIENTIST

By the way, what do you think of Damadian's work?

LAUTERBUR

I don't think he's capable of producing an image. He's just some crazy doctor at Downstate

SCIENTIST

What about his 3-D imaging technique, called Fonar?

LAUTERBUR

At Stony Brook we call it "phonymar."

CUT TO:

SAME - LARRY MINKOFF AND WAYLON HOUSE

HOUSE

Tell you what, Larry, if you ever go to Lauterbur's lab, look for a spot on the floor near the magnet. I'm putting in so many hours the pattern is worn off the linoleum.

MINKOFF

I'm putting in crazy hours, too, Waylon. What about Lauterbur?

HOUSE

He works long hours, too, when he's there. One night I asked him why he works so hard. And he said, "Well, I guess one does it for the approbation of one's peers."

MINKOFF

Don't we all? What's he like otherwise?

HOUSE

Oh, he's given to lots of strokes of genius. About one out of ten works.

MINKOFF

Not a bad average.

HOUSE

Yeah, but he has an ego problem.

MINKOFF

Who doesn't?

CUT TO:

INT. DAMADIAN'S LAB - DAY

The parts of the magnet are covered with drapes. DONALD VICKERS is there, holding the spectrometer he's delivering. He looks over the drapes, as DAMADIAN enters.

DAMADIAN

Looking for something, Don?

VICKERS

Just stretching my legs.

(holds up spectrometer)

What am I supposed to hook this up to?

DAMADIAN

(gingerly lifts part of
drape; points)

It goes there.

VICKERS

OK. But either you pay for the spectrometer in thirty days or I'm going to install a secret transmitter that will send all of your data to Lauterbur.

DAMADIAN reacts but does not laugh.

CUT TO:

INT. DAMADIAN HOME - DAY

DAMADIAN enters bedroom. DONNA wakes up.

DONNA

I thought you were going to be home at five? Everybody waited up.

DAMADIAN

I promise you, Donna, someday I'll make it up to you.

DISSOLVE TO:

EXT. CAR - DAY

FLASHBACK:

DAMADIAN is with his friend CHARLIE BRUKL, who is driving an old convertible. He is with DONNA TERRY, who Damadian will marry. He is in the back, with Donna's sister. He has a guitar, which he plays as he sings from the Kingston's Trio's song, "The Lion Sleeps Tonight.

DAMADIAN

"Wim-o-weh, wim-o-weh..."

Donna seems entranced by his music making.

BRUKL

Ray, if you don't stop playing that thing, I'll kill you!

EXT. TENNIS COURT - DAY

DAMADIAN and BRUKL are resting on the sidelines.

DAMADIAN

What's up with you and Donna?

BRUKL

We aren't dating anymore.

DAMADIAN

Mind if I ask her out?

CUT TO:

INT. DAMADIAN'S LAB - NIGHT

JOEL STUTMAN is at the computer, working. DAMADIAN observes.

STUTMAN

I'm glad you're wife is understanding.
Mine isn't. She wants a divorce.

DAMADIAN

I'm sorry, Joel. Would you like me to
talk to her?

CUT TO:

INT. DAMADIAN'S LAB - NIGHT

DAMADIAN is with MINKOFF, who is wearing a welder's visor and asbestos gloves. An issue of *Popular Science* is visible; it features an article on welding. Parts for the dewars are scattered about. Both men look pale and dejected.

DAMADIAN

I'll get some more soapy water.
We can't even have a hole big enough for
a molecule of gas to escape.

MINKOFF

(lifts visor)
I think I've burned myself enough for one
night.

DISSOLVE TO:

INT. DAMADIAN'S LAB - DAY

DAMADIAN, MINKOFF, GOLDSMITH, and GRADUATE STUDENTS are hoisting a dewar into a vertical position with block and tackle.

GRADUATE STUDENT

How much does this thing weigh?

MINKOFF

Only about a thousand pounds.

GRADUATE STUDENT

When you finish the second one, do me a
favor?

MINKOFF

What?

GRADUATE STUDENT

Let me know ahead of time, so I can call
in sick.

CUT TO:

INT. DAMADIAN'S LAB - NIGHT

DAMADIAN and MINKOFF are working on the reservoir tank that will be used to store the extra helium; it will feed into the dewars. MINKOFF has a VEECO MODEL MS17-AM helium leak detector, with which he is going over the reservoir.

MINKOFF

This reservoir has about as many holes as a sponge.

DAMADIAN

We've got to plug them all. We need someplace to store the extra helium.

MINKOFF

That doesn't mean we're going to get it.

DISSOLVE TO:

LATER - MINKOFF, WELDING

He checks for a leak with the detector.

MINKOFF

The leak moved back to where it was before.

Tears off his visor and throws it across the room. Hurls his gloves after it. Throws down the welding torch.

MINLOFF

That's it! That's finally it!

DAMADIAN

Come on, Larry. Don't give up now.

MINLOFF

I've had it.
(points to wristwatch)
It's four o'clock in the morning.

GOLDSMITH enters.

GOLDSMITH

Are you guys ever gonna get your end of the job done?

DAMADIAN

I'm making a decision. We'll go with one dewar.

GOLDSMITH

The magnetic field won't be as controllable.

DAMADIAN

We don't have a choice. There's no time left. Larry, let's just finish this storage tank and move ahead.

CUT TO:

INT. CAFETERIA, DOWNSTATE MEDICAL - NIGHT

GOLDSMITH is eating. A FACULTY MEMBER of the pharmacology department sees him, gets up from his own table, and joins GOLDSMITH.

FACULTY MEMBER

Mind?

GOLDSMITH

Go ahead.

FACULTY MEMBER

I just want to say, why don't you stop what you're doing?

GOLDSMITH

What makes you say that?

FACULTY MEMBER

Because it's an embarrassment to the university. Nothing will ever come of the nonsense that Damadian's fiddling around with.

GOLDSMITH

You're sure about that?

FACULTY MEMBER

It's utterly preposterous. Get out of there and do something with your life before it's too late. The guy is a failure.

GOLDSMITH

Thanks. Mind if I finish my dinner -- and make up my own mind about failure?

CUT TO:

INT. DAMADIAN'S OFFICE - DAY

TELEPHONE CONVERSATION with SCIENTIST at MIT.

CAMERA picks up some MIT identity.

SCIENTIST

Oh, now I know who you are, Damadian.
You're the one who's going to build an
NMR scanner big enough to put a patient
into.

DAMADIAN

That's right.

SCIENTIST

Rots of ruck.

CUT TO:

INT. PARTY, FOREST HILLS - NIGHT

DAMADIAN is at a party in Forest Hills, NY, with DONNA.
The host is introducing them to a FEMALE PHYSICIAN.

HOST

She's an oncologist.

DAMADIAN

Is that so?

FEMALE PHYSICIAN

Yes. I've treated many, many cancer
patients.

DONNA

Good for you.

DAMADIAN

I'm working on something that I believe
will help cure cancer.

FEMALE PHYSICIAN

Well, that's all fine and dandy. But if
you're successful, who's going to pay my
son's college tuition?

CUT TO:

INT. DAMADIAN LIVING ROOM - NIGHT

DAMADIAN and DONNA are both reading. He has a book of
biographies of famous scientists, and she has a magazine.

DONNA

Sometimes, I just don't know where you
get the strength to go on.

DAMADIAN

(indicates book)

A lot other scientists have had difficult times, too. Fleming discovered penicillin in the 1920's, and the establishment just laughed at him. But when World War Two broke out and the English were losing lots of people to wound infections, two scientists resurrected his papers and implemented his cure.

DONNA

I hope you don't have to wait that long.

CUT TO:

INT. DAMADIAN'S OFFICE - DAY

DAMADIAN is at the computer with JOEL STUTMAN.

STUTMAN

Maybe we should all find something easier to do.

DAMADIAN

Like what?

STUTMAN

Just about anything. I mean, how do you survive? A normal human being couldn't do it, especially when you could simply go out and be a physician, see your wife a lot, and play golf every Wednesday.

DAMADIAN

My father almost laid down his life to let me do the things I've done. I made him a promise, and I can't break it.

CUT TO:

INT. DAMADIAN'S OFFICE - DAY

GOLDSMITH seated across from his desk. MINKOFF on his feet.

MINKOFF

I didn't realize we're that short of money.

GOLDSMITH

What are we going to do - stop, let people go?

DAMADIAN

(holds up newspaper)

President-elect Carter is making all of these promises. He strikes me as a decent man, and what decent man wouldn't want to do something about cancer?

MINKOFF

Maybe you can telephone him.

DAMADIAN

I think I'll go see him. He's still at home in Plains.

GOLDSMITH

Can we afford the plane ticket?

CUT TO:

EXT. PLAINS, GEORGIA - DAY

The Plains Baptist Church. REVEREND MR. EDWARDS is on the steps, talking with DAMADIAN.

REVEREND EDWARDS

Yes, yes, I told your pastor that Jimmy would see you. But he's in the middle of selecting members of his cabinet.

DAMADIAN

If I could just get a couple of minutes with him, Reverend Edwards --

REVEREND EDWARDS

-- I'm wary of intruding just now. I'm terribly sorry.

CUT TO:

EXT. PLAINS, CARTER'S HOUSE - DAY

DAMADIAN is looking over CARTER'S HOUSE, which is surrounded by SECRET SERVICE PERSONNEL and REPORTERS. Talks to a member of the press.

DAMADIAN

What do you think the chances are of getting to see him?

REPORTER

I'd say hopeless.

CUT TO:

INT. ANTIQUE & SOUVENIR SHOP - DAY

DAMADIAN with proprietor, HUGH CARTER, a peppy man with a round face and Jimmy's cousin.

HUGH
(puts out hand)
Hugh Carter, Jimmy's cousin. Scientist,
huh?

DAMADIAN
(shakes hand)
Yes, I am.

HUGH
Think you can give me some advice about
my worm farm?

DAMADIAN
I don't know much about worms.

HUGH
Come along and take a look with me.

CUT TO:

EXT. WORM FARM - DAY

HUGH is showing DAMADIAN around his worm farm, which consists of a house and a big lake, surrounded by beds of worms. HUGH holds up a handful of dirt, loaded with worms.

HUGH
What do you think?

DAMADIAN
They look healthy to me.

HUGH
Tell ya what. I'd like to help you out.

He takes out PEN and BUSINESS CARD; scribbles; hands card to Damadian, who reads it.

REVERSE SHOT - BUSINESS CARD. The note reads: "Go to church on Sunday. Jimmy will be teaching Sunday school."

CUT TO:

INT. CHURCH - DAY

DAMADIAN is seated in first row with other members of the congregation.

JIMMY CARTER slips into the second row with HUGH and sits right behind Damadian. Hugh takes out a letter in an envelope from Damadian, addressed to Jimmy. Hands it to Jimmy. Hugh points out Damadian to him. Jimmy nods.

JIMMY
(whispers)
As soon as I get a free moment.

CUT TO:

INT. CHURCH - DAY

Services are over. JIMMY CARTER is shaking hands with church members. DAMADIAN is in line and shakes his hand, too. Attempts to say something. CARTER moves on.

CUT TO:

EXT. PLAINS, GAS STATION - DAY

BILLY CARTER'S gas station. Pickup trucks; refrigerator chest, filled with beer.

CUT TO:

INT. GAS STATION - DAY

It looks more like a beer joint. DAMADIAN, in a suit and tie, enters, obviously out of his element, and sees BILLY. Goes to him.

DAMADIAN
Billy, I want to talk to you.

BILLY
About what?

DAMADIAN
I'm a scientist with a valuable discovery in cancer and I need to talk with your brother, Jimmy.

BILLY
Well, I can't talk to you about that right now.

DAMADIAN
Well, when can I talk to you about it?

BILLY
Never.

OTHERS enjoy Billy's response.

CUT TO:

INT. HOME OF CARTER'S MOTHER, MISS LILLIAN - DAY

MISS LILLIAN is sitting in a rocking chair. DAMADIAN is just finishing showing her a videotape he did about NMR and cancer in an appearance on NBC.

MISS LILLIAN
Wouldn't it be wonderful if Jimmy cured
cancer during his administration?

DAMADIAN
Yes, it would, Miss Lillian.

MISS LILLIAN
Wonderful, just wonderful.

Her mind seems to wander, and he realizes she cannot be of help.

DISSOLVE TO:

INT. HOSPITAL ROOM - DAY

DAMADIAN is with his FATHER, who is now much older and in bed. Damadian takes his hand.

FATHER
You have made me very proud, son.

DAMADIAN
I just want you to get better.

FATHER
Read me something.

Damadian takes a Bible from the night table. Opens it. Reads passage, as tears drop from his eyes.

DAMADIAN
"And Jesus said, 'I am the way, the
truth, and the life..."
(looks up)
Access to the truth -- that's what this
passage means to me.

DISSOLVE TO:

INT. DAMADIAN MOTEL ROOM - NIGHT

INTERCUT: TELEPHONE CONVERSATION with DONNA, who is at home.

DONNA

Raymond, you've been there for two weeks.
It's getting close to Christmas.

DAMADIAN

I know, dear. I can't tell you how
frustrating this is.

CUT TO:

INT. HUGH CARTER'S ANTIQUE STORE - DAY

DAMADIAN is talking with HUGH.

DAMADIAN

I've got to see him, Hugh.

HUGH

Sorry to have to tell you, but he left
for Washington this morning.

CUT TO:

INT. PLANE - DAY

DAMADIAN is sitting on the plane, heading back to New York. Beside him is a man named BILL AKERS - well built, with thin gray hair and a ready smile.

DAMADIAN

All that happened is I'm going back to
New York a few hundred dollars poorer.

AKERS

Tough break. Don't understand a lot about
what you're talking about, but it sure
does sound interesting.

(puts out hand to shake)

Bill Akers, Nashville.

DAMADIAN

Raymond Damadian, M.D.

AKERS

(hands DAMADIAN card)
Civil engineer.

DAMADIAN

(looks at card; reads)
 "The Parent Company." That's an unusual name.

AKERS

Oh, just a place for me and my brother, Clarke, to hang our hats. He's a civil engineer, too. We had an asphalt business but we sold it. Been retired ever since.

DAMADIAN

You wouldn't be interested in investing in a cure for cancer would you?

AKERS

Well, you strike me as a sincere fellow. Wouldn't mind learning more about it.

CUT TO:

INT. DAMADIAN'S LAB - DAY

DAMADIAN is showing AKERS the magnet.

AKERS

Mighty interesting. I'd like to see what I can do to help you out.

DISSOLVE TO:

INT. RESTAURANT - NIGHT

DAMADIAN, DONNA, AKERS, and his wife, JOANN, having dinner.

AKERS

I tried, Raymond. Everybody listened, but nobody signed a check.

DAMADIAN

What if I don't get money by April first, I'm going to have to fold up the effort.

AKERS

How much do you need to go on - a million dollars, a hundred thousand dollars?

DAMADIAN

Ten-thousand dollars.

AKERS

I'll tell you what. I'm going to give it to you myself.

(takes out checkbook; writes)

DAMADIAN

I can't tell you how important this money is, Bill.

AKERS

I can. Because when I go back home, I can tell people I gave it to you and ask them to do the same. I figure between my brother and a couple of friends I can get you thirty more.

DAMADIAN

That would save the project.

AKERS

Then you got it. I don't want anything except two things. I want to be invited to Stockholm when you get the Nobel Prize, and I don't want to have to wait in any line if I ever have to get in one those machines.

CUT TO:

INT. DAMADIAN CAR - NIGHT

He is driving home with DONNA.

DAMADIAN

The thing I can't get over is I met him totally by accident.

DONNA

I haven't seen you this happy in ages.

DAMADIAN

I feel terrific. I don't need to drive home. I could float all the way. Nothing can stop me now. It would take masked men with guns to stop me.

CUT TO:

INT. DAMADIAN'S LAB - NIGHT

GOLDSMITH and HU are transferring liquid helium from the storage tank to the dewar. DAMADIAN observes.

DAMADIAN

More helium already?

GOLDSMITH

I didn't make the dewar. You and Larry did.

DAMADIAN

But it's costing two-thousand a week just to replace what evaporates.

CUT TO:

INT. DAMADIAN'S LAB - NIGHT

MINKOFF has finished building the seat for the magnet; it consists of a skinny wooden rail about six inches wide and about twenty feet long.

MINKOFF

Have a seat.

DAMADIAN

(sits)

Good work, Larry.

MINKOFF

It moves forward, backward, and sideways.

DAMADIAN

How does it do that?

MINKOFF

Muscle power.

CUT TO:

INT. DAMADIAN'S LAB - DAY

He observes GOLDSMITH, who has now built a coil about four-feet in diameter, which he has placed in the magnet. The coil is made of cardboard, wrapped with strands of copper wire. He has tubes of water inside the opening.

DAMADIAN

How's the receiver coil coming?

GOLDSMITH

I can't get a signal.

DAMADIAN

I don't understand why not. You and I designed it according to the specs we got from NMR Specialties. You think it's the coil or the magnet?

GOLDSMITH

I don't know. The problem is a total surprise.

DAMADIAN

I'll tell you what. Let's put a small coil in. If we get a signal, we'll know it's not the magnet.

DISSOLVE TO:

INT. DAMADIAN'S LAB - NIGHT

He puts the small coil in and then a water sample in it. He looks at GOLDSMITH and gestures to turn on the magnet. A signal appears.

GOLDSMITH

It's the coil.

DAMADIAN

That means the specs are only good for small antennas.

GOLDSMITH

But if we can't build a coil that's large enough, the rest of this beast will be useless.

DAMADIAN

Tell you what. Start to build coils in one-inch increments. Work by trial and error and see how large you can go.

GOLDSMITH

What do I have to go on?

DAMADIAN

Intuition.

CUT TO:

INT. DAMADIAN'S LAB - DAY

GOLDSMITH working on different coils, picking out capacitors from a bin and trying them out at random. He has hung the big coil from the ceiling by a wire; it hangs there like the whale at the Museum of Natural History. DAMADIAN observes his work. MINKOFF enters.

MINKOFF

I just got a signal.

DAMADIAN

How did you manage that?

MINKOFF

I built a coil with two loops of wire, one on each side of the cylinder. Only the patient will have to lie down.

DAMADIAN

Do you know why you were able to get a signal that way?

MINKOFF

I haven't got a clue.

GOLDSMITH

It must be the Minkoff effect.

CUT TO:

INT. DAMADIAN'S LAB - NIGHT

GOLDSMITH and DAMADIAN.

DAMADIAN

But, Mike, it's only nine inches in diameter.

GOLDSMITH

But it works. Come on. Let's do an arm or a head.

DAMADIAN

No, no -- we're going for the body.

DISSOLVE TO:

INT. DAMADIAN'S LAB - DAY

GOLDSMITH and DAMADIAN. GOLDSMITH now has a coil that is fourteen inches in diameter, made up of cardboard and copper-foil tape. MINKOFF observes.

GOLDSMITH

Fourteen inches.

MINKOFF

But does it work?

GOLDSMITH

Why else would I be showing it, Larry?

DAMADIAN

Did you try to go bigger?

GOLDSMITH

Yeah. Sixteen inches. Nothing.

DAMADIAN

Do you know why?

GOLDSMITH

No. But we should be able to get this around a human chest.

DAMADIAN

It will have to do.

They stand back and observe the machine. It's a mammoth circular metal device, with the storage chamber at the top and the wooden plank of the seat through the middle of the opening.

MINKOFF

The question is, will it work with somebody in it?

GOLDSMITH

Either it does or we'll be the laughingstocks of the scientific community.

DAMADIAN

In the event that it goes down in history, I want it to have a worthy name for it. How about "Indomitable"?

MINKOFF

Sounds fitting to me.

GOLDSMITH

If a bit optimistic.

DAMADIAN

Then Indomitable it is. Now, who's going to be the first one in the machine?

MINKOFF

Don't look at me.

GOLDSMITH

(holds up coil)

But you're just the right size, Larry.

MINKOFF

Not on your life! It's enough I helped build it. I don't have to die for it.

CUT TO:

INT. DAMADIAN'S LAB DAY

DAMADIAN, MINKOFF, GOLDSMITH, GRADUATE STUDENTS, and TECHNICIANS - the usual members of Damadian's team.

DAMADIAN

I realize that there are many unknowns. Be that as it may, are there any volunteers.

GRADUATE STUDENT

Are you kidding? That thing is five-thousand gauss!

TECHNICIAN

And you'll be bombarded with radio pulses!

SECOND GRADUATE STUDENT

I get headaches when I'm just around it.

DAMADIAN

OK. I guess I'm the guinea pig.

CUT TO:

INT. DAMADIAN'S HOME, DINNER - NIGHT

DAMADIAN, DONNA, and the three CHILDREN at dinner.

DONNA

What if you drop dead? What's going to happen to us?

DAMADIAN

I'm not going to drop dead.

DONNA

How do you know that?

DAMADIAN

We tested the machine on rats and none of them dropped dead.

KEIRA

But, Daddy, you're not a rat.

DAMADIAN

Thank you. I try not to be.

CUT TO:

INT. DAMADIAN'S OFFICE - DAY

DAMADIAN is at his desk. MINKOFF enters.

MINKOFF

Before we embark on this, shouldn't we get permission from the school's human experimentation committee?

DAMADIAN

I can see them deliberating for eight months. Afterward, they'll scream and yell. But it will be too late.

MINKOFF

Maybe in more ways than one.

DAMADIAN

The new department chairman couldn't care less what we're doing. In fact, he wouldn't care if I jumped out of the window.

DISSOLVE TO:

SAME - LATER

The machine is on.

GOLDSMITH

I don't know why but the field strength is only about a thousand gauss.

(does some business with magnet; lowers head in despair)

MINKOFF

Great, Mike. Now, it's down to about five-hundred gauss.

DAMADIAN

Is that the best we can do?

GOLDSMITH

Seems like it.

DAMADIAN

Do you think it's enough to produce a human image?

GOLDSMITH

Your guess is as good as mine's.

DAMADIAN

Let's scan some phantoms first.

CUT TO

INT. SAME - LATER

There is now a sample test tube of water in the magnet, with chemicals dissolved in it.

DAMADIAN
 (with note pad; writes)
 May tenth. A successful scan of - what's
 the name we're giving this sample?

GOLDSMITH
 Oscar Jr.

DAMADIAN
 Right. Oscar Senior didn't go so well.

INT. DAMDIAN'S OFFICE - DAY

DAMADIAN is at his desk. MINKOFF is seated across from
 it. GOLDSMITH is standing.

DAMADIAN
 Guess what, gentlemen. The NIH is sending
 some scientists to review our progress.

MINKOFF
 How many great applications did that
 take?

DISSOLVE TO:

INT. DAMADIAN'S LAB - DAY

DAMADIAN, MINKOFF, GOLDSMITH, and the SCIENTISTS from NIH
 are gathered around the machine.

DAMADIAN
 We've succeeded in focusing the NMR
 signal in a phantom.

SCIENTIST
 Excuse me, as a physicist who has been
 working in NMR for a long time, I can
 tell you that focusing a magnetic field
 in that way is theoretically impossible.

DAMADIAN
 (to GOLDSMITH)
 Let me demonstrate. Mike, put Oscar
 Junior in the magnet.

GOLDSMITH takes up test tube with water sample in it and
 places it in the coil. DAMADIAN turns on the magnet. A
 signal shows up on the monitor.

DAMADIAN (CONT'D)
 See. A signal. Now watch. Mike, move the
 sample.

GOLDSMITH reaches in and moves it.

DAMADIAN (CONT'D)

Now look. The signal vanished, because it's focused.

SECOND SCIENTIST

That proves nothing.

CUT TO:

INT. DAMADIAN'S OFFICE - DAY

MINKOFF and DAMADIAN.

MINKOFF

I wouldn't be too optimistic about getting the grant.

DAMADIAN

We can get along without it. Let's get back to business. Before we attempt a human scan, I want to go beyond test tubes.

MINKOFF

To what?

DAMADIAN

Something sizable, with flesh and bones.

MINKOFF

How about something sizable that's available?

DAMADIAN

How about a dead turkey?

MINKOFF

At least, it won't move.

DISSOLVE TO:

SAME - DAMADIAN ON PHONE

DAMADIAN

Can you stay open until we get there? We're not interested in eating the thing. It's for medical research.... Thank you.

(hangs up)

Send a graduate student to the deli.

CUT TO:

INT. DAMADIAN'S LAB, MAGNET - NIGHT

DAMADIAN, MINKOFF, GOLDSMITH, and a GRADUATE STUDENT. The GRADUATE STUDENT is placing the turkey in the coil. He steps out. The machine is turned on. All eye the MONITOR, on which we can see a rudimentary image of the inside of the turkey.

MINKOFF

Not a bad looking bird, if I say so myself.

DAMADIAN

Tomorrow night's the night.

CUT TO:

INT. DAMADIAN LIVING ROOM - NIGHT

DONNA

I'm worried sick about you.

DAMADIAN

No need for that. I'm having some physicians from Downstate on hand.

DONNA

What can they do if --

DAMADIAN

-- It's my pipe dream, Donna. I have to be the one.

DISSOLVE TO:

INT. DAMADIAN'S LAB - NIGHT

It's May 11, 1977. Warm and humid. DAMADIAN, MINKOFF, GOLDSMITH, and several GRADUATE STUDENTS. Some PHYSICIANS from the hospital who have been asked over to monitor the experiment. An ELECTROCARDIOGRAM, a DEFIBRILLATOR and OXYGEN are nearby.

DAMADIAN has a large green NOTEBOOK. He scribbles into it.

REVERSE SHOT: his note: "May 11, 1977. Thirty minutes in the field if I can stand it, fifteen minutes if I can't."

He slips out of his T-shirt. The physicians attach the electrocardiogram to his chest. A blood-pressure cuff is wrapped onto his right arm. Another EKG is wired to his head.

One CARDIOLOGIST has brought a camera. He wants to pose with Damadian. Another physician takes a shot of them.

CARDIOLOGIST

History is being made here tonight, and I want a picture of it.

DAMADIAN

We probably don't have all the bugs worked out yet. We're hoping to a signal, though, at least a feeble one.

GOLDSMITH

That alone will be cause for celebration.

The CARDBOARD COIL is slipped over Damadian's bare chest. It's a tight fit. He gets into the magnet and sits down on the rail. He gestures that he's ready and MINKOFF turns on the machine. Nothing. All react.

MINKOFF

Hold it. Let's have a look.

Minkoff and Goldsmith inspect the machine. Minkoff finds a broken wire.

MINKOFF (CONT'D)

A broken wire.

(to Damadian)

Might as well come out while we fix it.

DISSOLVE TO:

THE SAME - LATER

PHYSICIAN

(looks at watch)

Can we hurry this along?

MINKOFF

Got it.

(to Damadian)

Can you get back in?

DAMADIAN is helped back into the magnet and sits down on the rail again.

GOLDSMITH

Ready?

DAMADIAN

Ready as I'll ever be.

MINKOFF turns on the machine. Once again, no signal.

MINKOFF

Still no signal! I can't figure out what's wrong.

Damadian is helped out of the machine again.

CUT TO:

SAME - LATER

DAMADIAN is at the monitor. Observes.

DAMADIAN

It looks hopeless.

GOLDSMITH

Maybe our critics are right. Maybe this is a hair-brained scheme.

DAMADIAN

The only good news is I feel fine.
(gestures to coil)
Somebody help me out of this stuff.

Goldsmith helps him out of the coil and the physicians remove various apparatuses.

DAMADIAN (CONT'D)

Thank you for coming. Obviously, we have some work to do.

Physicians begin to depart.

CARDIOLOGIST

I'm sure you'll get it right.

DAMADIAN

The question is, when?

He takes up his notebook and enters into it. REVERSE SHOT of notebook: "Virtually no adverse reaction in the field."

GOLDSMITH

Good thing we had low expectations.

MINKOFF

But we did have expectations.

CUT TO:

INT. DAMADIAN BEDROOM - NIGHT

DAMADIAN can't sleep. DONNA's watching him.

DAMADIAN

I can't imagine what went wrong.

DONNA

Go to sleep, dear. Maybe you'll wake up
with the answer.

CUT TO:

INT. DAMADIAN'S LAB - DAY

DAMADIAN, MINKOFF, GOLDSMITH, and the rest of his usual
TEAM is throwing around ideas.

GOLDSMITH

Trying to tune in the signal from deep
within the body is like trying to tune in
a Manhattan radio station from Long
Island.

GRADUATE STUDENT

What if the problem is the technology
itself?

DAMADIAN

I refuse to accept that.

GOLDSMITH

(to DAMADIAN)
Maybe you're too fat.

MINKOFF

(eyes GOLDSMITH)
Look who's talking.

GOLDSMITH

What do you think? The body produces
electricity. Yours could have detuned
the antenna.

DAMADIAN

It's the only hypothesis worth
considering.

MINKOFF

It could also be that a coil can't be
made large enough for the technology to
work.

GOLDSMITH

What we need is a skinnier guinea pig.
Well, Larry?

All eyes turn toward MINKOFF.

MINKOFF

Don't look at me.

DAMADIAN

But, Larry --

MINKOFF

-- forget it! I'm only twenty-six. I'd like to see twenty-seven.

DAMADIAN

As I was attempting to say, nothing happened to me.

MINKOFF

So we think.

GOLDSMITH

Come on, Larry. Do it.

MINKOFF

If I ever consent, it'll be using my antenna, not yours.

(to DAMADIAN)

Give me time to perfect it.

DAMADIAN

We don't have time. Remember, Lauterbur doesn't have to build a magnet. It'll just come to him in a crate, like manna from heaven.

CUT TO:

INT. DAMADIAN'S LAB - NIGHT

MINKOFF and DAMADIAN are working on MINKOFF's saddle coil. GOLDSMITH enters.

GOLDSMITH

How's it coming?

MINKOFF

Don't ask.

GOLDSMITH

Larry, get in the damned machine already!

MINKOFF

Why don't you get in it?

DAMADIAN
 (observing Goldsmith's portly
 size)

Him?

CUT TO:

INT. DAMADIAN'S OFFICE - NIGHT

GOLDSMITH is with DAMADIAN. MINKOFF enters.

MINKOFF
 OK, I'll do it.

DAMADIAN
 Great, Larry.

GOLDSMITH
 Mind if I don't hang around for the scan?

DAMADIAN
 Why not, Mike?

GOLDSMITH
 It's never going to work, and it's nearly
 eleven. My wife forgot what I look like.

DAMADIAN
 I say it has a ninety-percent chance of
 succeeding.

GOLDSMITH
 I say ten percent.

DAMADIAN
 Wanna bet on it?

CUT TO:

INT. DAMADIAN'S LAB - NIGHT

DAMADIAN, MINKOFF, GOLDSMITH, and GRADUATE STUDENTS.
 DAMADIAN has GREEN NOTEBOOK.

DAMADIAN
 (consulting notebook)
 I made a checklist this time of things
 that have to work - twenty or thirty
 items. Let's go through them.

MINKOFF
 What, a countdown?

DAMADIAN
 If we know all the components are
 functioning properly and it still doesn't
 work --

GOLDSMITH
 -- we're in deep trouble.

CUT TO:

SAME - LATER

DAMADIAN
 Everything seems OK.

GOLDSMITH
 (looks at watch)
 But it's almost midnight.

DAMADIAN
 Ready, Larry?

MINKOFF
 Not really. But I'll do it.

MINKOFF takes off his shirt and raises his arms above his head. Damadian and Goldsmith attempt to slip the cardboard coil over his chest.

MINKOFF (CONT'D)
 The fit is fairly tight.

GOLDSMITH
 Get in there, will you?

MINKOFF
 All right, all right. Don't rush me.

They succeed in getting the coil on him. MINKOFF walks into the machine and sits down on the rail. DAMADIAN and GOLDSMITH position the coil until they're satisfied.

GOLDSMITH
 You'll have to keep your arms up, so your chest doesn't touch the coil and cause interference.

MINKOFF
 Just what I needed.

GOLDSMITH
 And remember to breathe in and hold your breath for every reading.

DAMADIAN and GOLDSMITH go to the controls.

DAMADIAN

Well, Mike, you finally got Larry where you wanted him all these years.

They laugh.

MINKOFF

Thanks, guys.

DAMADIAN

Ready, Larry?

MINKOFF

Ready as I'll ever be.

GOLDSMITH flips on the machine. As soon as he does, there's a signal on the oscilloscope. Excitement.

DAMADIAN

We have a signal, Larry.

MINKOFF

Just my luck. I thought I'd be in and out of here in a few minutes.

GOLDSMITH

No chance, Larry.
(to Damadian)
Congratulations. You win.

DAMADIAN

Let's see if we can get a scan. If it focuses the way it did on the turkey, we should be able to.

(to graduate students)

One of you get at each end of the seat, so you can move him as we take the readings.

The graduate students take their places.

GOLDSMITH

OK, Larry, breathe in and hold that breath.

Damadian and Goldsmith operate the controls and begin to take readings.

DAMADIAN

(to graduate students)
OK, move him to the right one inch.

DISSOLVE TO:

SAME - LATER

DAMADIAN

Move him another inch. We need to get the entire width of his chest.

DISSOLVE TO:

SAME - LATER

DAMADIAN

Now, let's start to move him backward and forward.

DISSOLVE TO:

SAME - LATER

DAMADIAN

There's the signal from his heart.

GOLDSMITH

Is this exciting or what?

DAMADIAN

It's history, Mike.

(calls)

Larry, keep it up. We're making history tonight. You OK?

MINKOFF

Let's just say I'm still alive. How much longer do you think I can hold my arms up?

DAMADIAN

As long as you possibly can.

GOLDSMITH

Longer.

As the data is received, Goldsmith sketches out an image with colored pencils on graph paper.

CUT TO:

SAME - LATER

MINKOFF

Guys, it's been over an hour. I hate to tell you this, but my arms are getting numb.

DAMADIAN
I have an idea.

CUT TO:

SAME - LATER

DAMADIAN is stringing a rope across the magnet.

DAMADIAN
Rest your arms on it.

MINKOFF
(does so)
Thanks. Much better.

CUT TO:

SAME - LATER

DAMADIAN
(to MINKOFF)
How you holding up?

MINKOFF
I'm in pain and it's chilly in here.

GRADUATE STUDENT
We're bushed.

DAMADIAN
(looks at watch)
We've been at it for two hours. Let's
take a short break.

DISSOLVE TO:

SAME - LATER

MINKOFF
Come on, Mike, hurry up!

GOLDSMITH
Larry, watch this.

He moves his hands over the controls in slow motion.

MINKOFF
Mike! Come on!

DAMADIAN
Calm down, calm down. Larry, every time
you move, you create a distortion.

MINKOFF

You want to talk about distortion? How about my body?

CUT TO:

SAME - LATER

MINKOFF

It's three AM, and I'm shivering. Sorry, but I need to put my T-shirt back on for a while.

GRADUATE STUDENT

What do you say we call it quits for the night?

DAMADIAN

There's a cardinal principle of science. If something's working, you don't quit.

GOLDSMITH

That's right. Who knows when this contraption will work again?

MINKOFF

OK, but I need to put my shirt on for a while.

CUT TO:

SAME - LATER

CLOSE SHOT - color IMAGE drawn by GOLDSMITH, based on numerical data from the different tissues.

DAMADIAN (V.O.)

(his finger, pointing)

His entire chest. Fantastic! The first MR image of a live human being.

GOLDSMITH (V.O.)

Sixty-four different positions, with twenty to thirty signals at each one, processed with the signal averager.

CUT TO:

DAMADIAN

Conclusion. We have a great image!

MINKOFF

I only want to know one thing. How much longer? I've been in this thing for four hours and forty-five minutes.

DAMADIAN

We're done, Larry.

MINKOFF

And not a minute too soon.
 (to graduate students)
 Get me out of this thing.

DAMADIAN

(calls to Minkoff)
 Come and have a look, Larry.
 (to graduate students)
 All of you, come and see.

Graduate students help Minkoff out of the coil. Minkoff and the Graduate Students join Damadian and Goldsmith in looking over the image.

MINKOFF

That's me, huh? Wow, what do you know?

DAMADIAN

We did it - the entire voyage - from the discovery of the signal from tumors all the way to the first human scan.
 (points to data)
 The body wall, right and left lungs, the heart, with the right atrium and one of the ventricles, and a cut through the descending aorta.

GOLDSMITH

You should be relieved, Larry. You don't have any tumors.

MINKOFF

Thanks, Mike. I'm glad to hear that.

GOLDSMITH

Tomorrow, we can feed the data into a computer and reconstruct a polished image.

DAMADIAN

Gentlemen, we've opened the human body down to the tissue molecule. This calls for a celebration!

CUT TO:

DAMADIAN'S LAB - LATER

DAMADIAN pops open a bottle of wine.

DAMADIAN

I stashed this to celebrate the event.

He pours wine for all. General euphoria. Damadian holds up a cigar.

DAMADIAN (CONT'D)

Ah, and a victory cigar.

He lights it up.

DAMADIAN (CONT'D)

It all seems worth it now! Our critics will finally be stilled.

MINKOFF

Don't bet on it.

DAMADIAN

Thanks for your patience, Larry. It took five tries but we did it. In your honor, I'm calling the image Mink Five.

MINKOFF

Thanks, but right now I'm too sleepy to get excited.

GOLDSMITH

Ah, man, I just remembered, guys. Today is my wedding anniversary. I gotta get home.

CUT TO:

INT. DAMADIAN'S CAR - NIGHT

DAMADIAN, MINKOFF, and GOLDSMITH are driving around.

DAMADIAN

It's the most exciting thing in my life - the culmination of seven years of toil.

GOLDSMITH

Still, at some point, I'd appreciate it if we could stop driving around and go home.

MINKOFF

I'm exhausted.

DAMADIAN

(to Minkoff)

I'm not letting you out of my sight -- in case there are any ill effects.

MINKOFF

Fine. But I need a shower.

DAMADIAN

I'll follow you home and wait for you.
Then you'll come to my house and sleep on
the couch.

CUT TO:

INT. DAMADIAN HOME - NIGHT

DAMADIAN and MINKOFF enter. DAMADIAN points out couch and
hands MINKOFF blanket and pillow.

DAMADIAN

I think you'll be fine. But, if you feel
strange in any way, wake me up.

LARRY

If I can make it up the stairs.

Damadian heads to bed.

CUT TO:

INT. DAMADIAN'S BEDROOM - NIGHT

DAMADIAN

It's absolutely wonderful, Donna. Tonight
we achieved the first human scan.

DONNA

Oh, I'm so happy for you. You've worked
so long and hard. How do you feel?

DAMADIAN

Euphoric. But bone tired. Going someplace
where no one has ever gone. It makes my
mind swim.

DONNA

Remember, tomorrow is the fourth of July.
We have a family picnic.

He reacts and then closes his eyes.

CUT TO:

INT. DAMADIAN'S OFFICE - DAY

DAMADIAN is at his desk, working on a paper detailing the
breakthrough. MINKOFF and GOLDSMITH are with him.

MINKOFF

Where are you going to submit the
article?

DAMADIAN
The journal of *Physiological Chemistry*
and *Physics*.

GOLDSMITH
Why not *Science* or *Nature*?

DAMADIAN
I don't want to take months for it to be
published. You want somebody else to beat
us into print? I'm also calling a press
conference to announce the breakthrough.

GOLDSMITH
Who's going to set it up? The publicity
person at the university left for another
job.

DAMADIAN
We'll have to find somebody outside.
(to Minkoff)
How's the data input coming?

MINKOFF
It's a tedious process.

DAMADIAN
I need you to get it done, so I can show
a video image at the press conference.

MINKOFF
I realize that. I have Joel standing by
to handle it.

CUT TO:

INT. DAMADIAN'S LAB - NIGHT

JOEL STUTMAN comes in and turns on the light. He goes to
the computer, sits down, and turns it on. He calls up the
image. He's astonished. We can make out the chest wall
and the organs. He gets up.

CUT TO:

INT. HALLWAY AT DOWNSTATE - NIGHT

STUTMAN is running down the hall, looking for somebody to
share his enthusiasm with. He sees one of the usual
GRADUATE STUDENTS.

STUTMAN
You gotta see this. I just called up the
image on the computer. It's beautiful.

GRADUATE STUDENT

Really?

STUTMAN

I can see everything - the heart, the lungs. Come on.

He and the graduate student head down the hall.

CUT TO:

INT. DAMADIAN'S LAB - NIGHT

STUTMAN and the GRADUATE STUDENT enter the lab and go up to the computer.

STUTMAN

Didn't I tell you?

GRADUATE STUDENT

Amazing.

Just then the lights in the lab blink, dim, and then go out. The computer goes black.

CUT TO:

INT. DAMADIAN'S OFFICE - DAY

STUTMAN

The citywide blackout knocked the computer out. I checked. A lightning bolt struck Con Ed's transmission lines in Westchester.

DAMADIAN

I know about the blackout. So?

STUTMAN

The image was lost.

DAMADIAN

What do you mean, the image was lost?

STUTMAN

Just what I said. Larry and I will have to reinput the data.

DAMADIAN

How long will that take? I have a press conference coming up in two days.

STUTMAN

We'll get right on it.

DAMADIAN

Even the elements are conspiring against me!

CUT TO:

INT. DAMADIA'S LAB - NIGHT

MINKOFF and STUTMAN at work at the computer. They have the drawing with the readings on it, and are using it to input the data again.

MINKOFF

Think we can get it done in time?

STUTMAN

All I can do is what I can do.

CUT TO:

SAME - LATER

STUTMAN

Got it.

The same image comes up on the computer.

MINKOFF

I never looked better.
(looks at wristwatch)
And not a moment too soon.

DISSOLVE TO:

INT. DAMADIAN'S LAB - DAY

Press conference with about twenty reporters present. Most are expectant, some bored. They have copies of the press release. MINKOFF, GOLDSMITH, STUTMAN, KOUCHER, and other GRADUATE STUDENTS look on. DAMADIAN is showing them the scan on a monitor near Indomitable. As the conference goes on, the reporters grow increasingly hostile, and DAMADIAN'S TEAM grows more concerned.

DAMADIAN

Gentlemen, what you're looking at is the first image ever of a live human being achieved with nuclear magnetic resonance. We've named it after the postdoctoral fellow whose chest the image is of, Larry Minkoff. We call it Mink Five.

REPORTER

Yes, yes, but the press release states that we're going to witness the application of the technique.

DAMADIAN

It does?

(looks at release)

It took almost five hours to complete this scan.

SECOND REPORTER

It also says your machine can be used for the nonsurgical detection of cancer.

DAMADIAN

Yes, it can. That's the whole idea.

THIRD REPORTER

Have you used it to do that?

DAMADIAN

As you may be aware, I performed the first ever cancer-related experiments with NMR and was able to distinguish between normal tissue and cancer tissue, as well as the differences between the various normal tissues.

SECOND REPORTER

I'm familiar with that work, doctor. Wasn't it done on rats?

DAMADIAN

Yes, it was.

SECOND REPORTER

It says here you can detect it in a live human being? Have you done that experiment?

DAMADIAN

That's next on the agenda.

THIRD REPORTER

Let's say for argument's sake that you can detect cancer. How can you cure cancer with it?

DAMADIAN

You don't. The machine shows you where the cancer is. Then you can direct chemicals or radiation at it to kill it.

SECOND REPORTER

Have you or anyone else demonstrated that approach actually works?

CUT TO:

INT. DAMADIAN'S LAB - DAY

The reporters have departed. DAMADIAN'S TEAM is present. All are noticeably upset.

DAMADIAN

I'm sorry. I don't have any experience with press conferences!

MINKOFF

Obviously. You want my opinion? It was a disaster. The stupid press release from the PR agency you found overstated the case.

GOLDSMITH

We should have gone the usual route and published the work in a scientific journal.

CUT TO:

MONTAGE - TELEVISION NEWS

NEWSCASTER

Dr. Damadian seemed to be making some very extravagant claims. We asked the experts.

CUT TO:

SEPARATE SHOTS OF EXPERTS

FIRST EXPERT

If true, terrific. But it needs more investigation.

SECOND EXPERT

He hasn't published the details.

THIRD EXPERT

NMR can't be used to detect malignant tumors.

FOURTH EXPERT

His claims are premature and inflated.

Next comes LARRY BLASER, a spokesperson for the National Cancer Institute, speaking with the logo of the NCI behind him.

BLASER

We don't look on nuclear magnetic resonance as a promising area of diagnosis.

CUT TO:

CLOSE SHOT - THE NEW YORK TIMES

Page eighteen, HEADLINE: "NEW YORK RESEARCHER ASSERTS NUCLEAR MAGNETIC TECHNIQUE CAN DETECT CANCER, BUT DOUBTS ARE RAISED."

HIGHLIGHT THE PHRASE "BUT DOUBTS ARE RAISED." ALSO HIGHLIGHT THIS COPY: "However, in an interview later in the day, he retracted a contention that he had already used the technique on a cancer patient."

CUT TO:

INT. DAMADIAN'S OFFICE - DAY

Visibly agitated, he tucks The New York Times article under his arm and departs from his lab.

CUT TO:

INT. DAMADIAN HOME, DINNER - NIGHT

DAMADIAN, DONNA, THREE CHILDREN.

DAMADIAN

(drops fork)

I almost have apoplexy.

DONNA

Dear, it's only one silly newspaper article.

DAMADIAN

It's more than one article. It's *The Times*. It's my fault. The press release was badly worded, but in the craziness of what was going on, I approved it.

DONNA

We all make mistakes.

DAMADIAN

The reporter twisted what I said. But it will have a wide impact. People aren't going to believe what I've done. Everyone who thinks I'm crazy now has hard evidence.

DONNA

You'll never change their minds.

DAMADIAN

But even people who were friends of mine were passing me in the hall today and wouldn't even talk to me.

DONNA

Can I suggest something? The house in Vermont is dilapidated, but I think we could use a weekend there. The garden we planted will be ready to harvest.

JEVAN

Great, Mom! A weekend in the country!

KEIRA

Can we go for a ride in the buggy?

DISSOLVE TO:

EXT. VERMONT COUNTRY HOUSE - DAY

DAMADIAN and DONNA are sitting on the porch.

DONNA

You've been depressed the whole time. And very irritable.

DAMADIAN

I'm sorry. The whole project is in jeopardy. This fiasco could keep me from getting grant money and medical students. Not to mention that it could prevent me from being promoted to a full professor.

CUT TO:

EXT. DAMADIAN HOME IN VERMONT - DAY

DAMADIAN is standing on the porch. He takes his violin from the case, holds it to his chin, and begins to play a heartfelt passage from Beethoven's "Violin Concerto in D." He gets carried away, and we can tell he finds great consolation in the music.

CUT TO:

INT. DAMADIAN'S OFFICE - DAY

He's sitting at his desk, reading letters and seemingly delighted. MINKOFF and GOLDSMITH are with him.

DAMADIAN

I knew somebody would get what we did!
Read this. A letter from Albert Szent-
Gyorgyi, the Nobel laureate in
biochemistry.

(hand it to Minkoff)

MINKOFF

(reads letter aloud)

"Delighted with your wonderful
achievement."

(to Damadian)

This makes up for a lot.

DAMADIAN

I sent a copy of the image to my former
professor at Harvard, Edward Purcell, who
shared the Nobel for the discovery of
NMR.

(gives letter to GOLDSMITH)

GOLDSMITH

Hey, this is terrific!

(reads aloud)

"Thank you very much for sending me a
copy of your historic first picture. From
a mouse and a hand to your beautiful
chest cross section certainly is an
impressive jump. I congratulate you and
shall keep the picture as a perpetual
reminder of how little one can foresee
the fruitful application of any new
physics."

(looks up)

Suddenly, I'm feeling better. What else
have you got?

DAMADIAN

Solomon, the head of the biophysical lab
at Harvard when I was there, says, "It is
clear that this is an advance of great
promise and you are to be congratulated
for your perseverance and pioneering
skill in bringing it off so
successfully."

MINKOFF

Well, now that we've heard from our
friends, anything from our competitors?

DAMADIAN
(picks up envelopes)
Three letters from the University of
Nottingham.

MINKOFF
Three?

GOLDSMITH
What do they say?

DAMADIAN
(reads selections)
Waldo Hinshaw writes, "Your progress is
impressive. There are probably a few
people suffering from envy now." E. R.
Andrews says, "This is an important
achievement and a valuable step forward
in applying NMR imaging to medicine."

GOLDSMITH
Any word from Mansfield?

DAMADIAN
Yes. He says, "Let me congratulate you on
a very nice piece of work."

MINKOFF
That was nice of them.

GOLDSMITH
Anything from Lauterbur?

DAMADIAN
Not a word.

MINKOFF
I talked to somebody in his lab. Want a
direct quote?

DAMADIAN
I'm not sure I want to hear it.

MINKOFF
(takes note from pocket)
I wrote it down.
(reads)
He said, and I quote, "I wouldn't want to
be quoted. Well, let's see if I can tone
it down. The technique itself is an
obvious dead end. It's slow and produces
low resolution and poorly defined images.
The magnet he built does not seem
appropriate for the purpose. But it will
get a lot of publicity. To a scientist
it's of no use.

(MORE)

MINKOFF (CONT'D)

To the extent that someone is concerned about publicity and firsts, one would have hoped that things would have gone otherwise."

GOLDSMITH

Does he say anything positive, like we proved that a magnet could produce a human image?

MINKOFF

As a matter of fact, no. He said, "It was just a question of getting everything together at once.... These are just matters of detail."

DAMADIAN

What did you expect, praise?

MINKOFF

I have even worse.

GOLDSMITH

Worst than that? Who from?

MINKOFF

Hollis.

DAMADIAN

That figures.

MINKOFF

We took a lot of people by surprise. So they're all talking.

(takes out another note;
reads)

Quoting once again, "It was nothing but a publicity stunt. Anyone could have done it. Paul Lauterbur could have done it. He said to me, "Let's get a really good image of an animal, instead of some blob." I tell you, it isn't useful. It isn't good. It isn't anything. It isn't good enough to even be sure it's human. I don't recognize it as a picture. I claim he did not take a picture of the human body."

DAMADIAN

How eminently kind of him.

GOLDSMITH

I don't know where he gets off saying that. Jason Koutcher showed it to a couple of his friends who are medical students. He didn't tell them what it was. They recognized it right off as a human chest.

DAMADIAN

Of course, they did. What else would it be? Now, that you've assailed me with Lauterbur and Hollis, let me read you something from Don Vickers. It's a quote from Machiavelli's *The Prince*.

(reads)

"It must be remembered that there's nothing more difficult to plan, more doubtful of success, nor more dangerous to manage than the creation of a new system. For the initiator has the enmity of all who would profit by the preservation of the old institution and merely lukewarm defenders in those who would gain by the new ones."

CUT TO:

INT. DAMADIAN'S LAB - DAY

MINKOFF and GOLDSMITH at work. GOLDSMITH looks depressed. DAMADIAN confronts him.

DAMADIAN

What's wrong, Mike?

GOLDSMITH

I just had another paper rejected. Ever since we did the scan, our work has become too hot for the journals to handle.

MINKOFF

If you look at it, the criticism seems to be starting to coalesce around the argument that, yes, you can determine the difference between cancerous tissue and normal tissue, but can you determine the difference between cancerous tissue and other abnormal pathologies?

DAMADIAN

Larry, you have to start somewhere. Cancer detection is the ground floor.

GOLDSMITH

I'm also getting a lot of resistance from pathologists. As soon as I knock down one objection, they come up with another.

DAMADIAN

What do you expect? They've got a vested interest in current technology.

MINKOFF

You want to know my response? If science is so perfected that nothing can be added to it, then there should be no research.

DAMADIAN

I don't care what anybody says. Crude as it may be, Indomitable is the first step to a human scanner. The next challenge is to get the scan time down.

GOLDSMITH

I'll work on it, providing that, if I can pull it off, Larry will go back in the scanner -- won't you, Larry?

CUT TO:

INT. DAMADIAN'S LAB - NIGHT

DAMADIAN, GOLDSMITH, and MINKOFF.

GOLDSMITH

Come on, Larry, get in there.

MINKOFF

I'm not feeling well. I told you, I had a blood test done, and I have an abnormal white count.

DAMADIAN

Larry, it's not off by much. And I seriously doubt that it has anything to do with this.

MINKOFF

All right, all right. Only it better go faster than the last time.

CUT TO:

INT. DAMADIAN'S LAB - NIGHT

DAMADIAN, GOLDSMITH, and MINKOFF are viewing another image of MINKOFF'S CHEST.

GOLDSMITH

Didn't I tell you it would go faster?

MINKOFF

It did, somewhat.

DAMADIAN

I feel encouraged enough to try a cancer patient.

CUT TO:

EXT. DAMADIAN'S CHURCH IN FOREST HILLS - DAY

JIM SOUTHARD is talking with DAMADIAN after services.

SOUTHARD

I have a tumor very high up in my chest, almost in my neck, Dr. Damadian. I know I'm dying.

DAMADIAN

I'm sorry, Jim.

SOUTHARD

I want you to do a scan of me in your new invention. Then maybe I can make something positive out of this.

CUT TO:

DAMADIAN'S LAB - DAY

DAMADIAN is helping SOUTHARD into the scanner.

DAMADIAN

Are you comfortable?

SOUTHARD

It doesn't matter. I want to see what's killing me.

DAMADIAN

You're doing a great service to science.

DISSOLVE TO:

SAME - LATER

DAMADIAN, GOLDSMITH, and MINKOFF are at the controls.

GOLDSMITH

The signal to noise ratio is terrible. We're not going to get an image.

MINKOFF

We're lucky the machine worked when it did.

DAMADIAN

Maybe we need to shield the room to block out extraneous noise.

DAMADIAN goes to SOUTHARD.

SOUTHARD

How'd we do?

DAMADIAN

No good, Jim. We couldn't get an image. We have work to do.

CUT TO:

INT. DAMADIAN'S LAB - DAY

DAMADIAN, GOLDSMITH, MINKOFF and GRADUATE STUDENTS are installing a chamber made of laminated flakeboard and galvanized metal.

CUT TO:

INT. DAMADIAN'S LAB - DAY

The new wall is complete. MINKOFF is in the scanner. DAMADIAN and GOLDSMITH are at the controls.

DAMADIAN

The signal to noise ratio is still awful, Mike.

GOLDSMITH

I don't know what more to do about it.

DAMADIAN

I do. Mothball it.

GOLDSMITH

Just quit?

DAMADIAN

I don't know what else to do. I don't have anymore working capital and scant prospects for future funding. In fact, I'm now forty-thousand dollars in debt.

GOLDSMITH

Forty-thousand? Who do we owe that much to?

DAMADIAN

Half is owed to the department just for the image display system we ordered. Then there's the liquid helium.

(MORE)

DAMADIAN (CONT'D)

It's costing me a hundred thousand dollars a year to feed this dinosaur.

CUT TO:

INT. DAMADIAN'S OFFICE - DAY

DAMADIAN is with ALFRED BOLLET, the department chairman.

BOLLET

The department needs the money now, Dr. Damadian.

DAMADIAN

I just don't have it, Alfred.

BOLLET

When I agreed to the loan, you said you could pay it off with future grant money.

DAMADIAN

I thought I could. But there is no grant money just now. Worse yet, I don't know when there will be.

CUT TO:

INT. SCIENTIFIC CONFERENCE - DAY

WAYLAN HOUSE and MINKOFF, talking during intermission over a cup of coffee.

MINKOFF

Waylan, what do you mean, you quit Lauterbur?

HOUSE

Just what I said. Too much politics involved. I began to feel that Raymond Damadian in particular is getting screwed.

INT. BOLLET'S OFFICE - DAY

DAMADIAN comes charging in.

DAMADIAN

Alfred, you can't just shut off my phone lines. I have work to do!

BOLLET

There's nothing I can do about it, Raymond. You've built up thousands of dollars just in phone bills.

DAMADIAN

You're the one who changed the rules. The department used to pick up my phone bills. One reason I came back to Downstate after my two-year stint in the Air Force is Dr. Eichna pledged to support my research efforts.

BOLLET

It was a different time. Like all the other scientists here, you're now expected to foot your own phone bills.

DAMADIAN

But I have important calls coming in from scientists around the world. And they're being told, "Sorry, this is no longer a working number at the university." I feel ridiculous.

BOLLET

Pay your phone bill, and I'll have your extensions turned back on.

CUT TO:

INT. TELEPHONE ROOM - DAY

DAMADIAN is in the telephone room. He is talking to a friend who works in it.

DAMADIAN

How can you do this to me? You're supposed to be my friend. Come on. Turn them back on. He won't know.

FRIEND

I can't do that, Ray. He'd fire me. But you see those switches right there.

(points to telephone switches)

If somebody were to turn them on without my knowledge ...

DAMADIAN

Thank you!

He reaches out and flips the switches.

CUT TO:

INT. DAMADIAN'S OFFICE - DAY

GOLDSMITH sitting across from DAMADIAN'S desk. DAMADIAN is on the phone. Suddenly, it goes dead.

GOLDSMITH

What's happened?

DAMADIAN

I lost the call! I'm finally getting a grant, and I lose the call. Bollet shut the lines off again!

GOLDSMITH

That sounds like ancient history. Now, you can pay the phone bill.

DAMADIAN

Just in time, too. I didn't tell you or Larry, but we narrowly escaped getting kicked out of my lab.

GOLDSMITH

We did?

DAMADIAN

There's something else I didn't tell either of you. I didn't get promoted to full professor.

GOLDSMITH

That's ridiculous. What reason did they give?

DAMADIAN

The committee said they couldn't judge the pictures we made. Apparently, when *The Times* article came out, that did it. So I guess I'll be an associate professor until I die.

CUT TO:

INT. DAMADIAN'S LIVING ROOM - NIGHT

He's talking with DONNA.

DAMADIAN

Donna, at least, I have tenure. So they couldn't boot me out of the university altogether.

DONNA

They'd never do that.

DAMADIAN

I don't know anymore. The rotten thing is, the promotion would have given me more money and staff.

DONNA

I'm sorry, dear, but they can never take away what you did.

DAMADIAN

No, they can't. But this could eventually drive me out of the university.

CUT TO:

CLOSE SHOT - MEDICAL TRIBUNE

Issue of December 5, 1977. Dateline, Nottingham.
HEADLINE: "NEW BODY SCAN TECHNIQUE GIVES PICTURES IN LIVING COLOR."

CUT BACK: DAMADIAN at desk, in shock, hands newspaper to MINKOFF, who is standing across from his desk.

DAMADIAN

It's about Peter Mansfield. What makes it even more infuriating is, I notified the same paper right after we got the scan, thinking the editor might be interested in the story.

MINKOFF

What did he say?

DAMADIAN

It's "not especially newsworthy."

MINKOFF

Let me read this a moment, OK?

(reads aloud)

"A noninvasive technique for producing pictures of the interior of the human body - with almost textbook anatomical detail - has been achieved by biomedical researchers here."

DAMADIAN

Keep reading.

MINKOFF

"The technique, which uses a strong magnetic field, holds great promise in the diagnosing and treatment of cancer."

DAMADIAN

Skip down a bit. You won't believe what he actually did.

MINKOFF

OK. It says "Mansfield's team has produced cross-sectional pictures of tissue water distribution through a human head and body."

(looks up)

The clear implication is that Mansfield's group has produced the first images by NMR scanning.

DAMADIAN

But that's not what he did. I checked it out. He showed hand-drawn simulations of what an NMR image might look like. And guess what he based the drawings on? X-rays of autopsy specimens.

MINKOFF

Autopsy specimens?

DAMADIAN

It's outrageous. We produced an actual chest image, and he's getting publicity for some drawings from X-rays!

MINKOFF

I wouldn't write him off completely. He's got a lot more funding than we do. I happen to know he's got a human-size magnet on order.

DAMADIAN

He does? Why didn't you tell me sooner?

MINKOFF

I only found out yesterday.

INT. DAMADIAN'S LAB - DAY

GOLDSMITH is working with a small magnet, which is powered by a 12-volt battery. DAMADIAN is with him.

DAMADIAN

How's it coming, Mike?

GOLDSMITH

I've been working with this small magnet, and I think I know how to cut down the noise in Indomitable.

DAMADIAN

Then let's rev it up and see.

DISSOLVE TO:

INT. DAMADIAN'S LAB - NIGHT

GOLDSMITH and DAMADIAN are at the controls. MINKOFF is placing the phantom, Oscar, in the coil.

MINKOFF

Oscar is ready once again.

Moves outside of magnet. DAMADIAN and GOLDSMITH turn on the machine.

MINKOFF (CONT'D)

Well?

GOLDSMITH

Well, what? We're still not getting a signal.

MINKOFF

None at all?

DAMADIAN

There has to be a reason. What if the steel in the shielded wall is responsible?

MINKOFF

It would conduct magnetism.

GOLDSMITH

Maybe it's increasing the size of the focusing point.

DAMADIAN

We have to tear it down and replace it.

CUT TO:

INT. DAMADIAN'S OFFICE - DAY

DAMADIAN is at his desk. MINKOFF rushes in.

MINKOFF

More news from Nottingham.

DAMADIAN

What?

MINKOFF

An image was obtained of Mansfield's abdomen.

DAMADIAN

His abdomen?

MINKOFF

He chose that part of the anatomy because we already did the chest. Nevertheless, it's the second human image.

DAMADIAN

But we did the first one, didn't we?

MINKOFF

He said if the bloody magnet arrived sooner, he felt he and not us would have gotten the first scan.

DAMADIAN

We've got to get a scan of a tumor in a live patient, and we've got to get it now.

CUT TO:

INT. DAMADIAN'S LAB - NIGHT

DAMADIAN, GOLDSMITH, and MINKOFF are tearing down the new wall.

CUT TO:

INT. DAMADIAN'S LAB - DAY

GOLDSMITH and DAMADIAN at the controls. MINKOFF in the magnet with Oscar.

MINKOFF

Oscar is ready.

GOLDSMITH turns on the magnet. A signal shows up.

GOLDSMITH

What do you know? It was the wall.

DAMADIAN

We have a signal, Larry. I want to do another scan of you to see what we get with the lower signal-to-noise ratio.

MINKOFF

Just what I needed to hear.

DISSOLVE TO:

INT. DAMADIAN'S LAB - DAY

GOLDSMITH, DAMADIAN, and MINKOFF, eyeing another image of MINKOFF'S chest.

DAMADIAN
 Much better, Larry.

MINKOFF
 The important thing is, it only took an hour and forty-five minutes.

GOLDSMITH
 With a few tweaks, I think we can cut that down.

MINKOFF
 Again?

GOLDSMITH
 Come on, Larry. Do it for science.

DISSOLVE TO:

SAME - A FEW DAYS LATER

DAMADIAN, GOLDSMITH, and MINKOFF, looking at yet another image of MINKOFF's chest.

GOLDSMITH
 Thirty-eight minutes.

DAMADIAN
 It's time to try another cancer patient.

MINKOFF
 Who can we get?

DAMADIAN
 I have a relative with cancer - my sister's father-in-law. He owns the House of Chan restaurant in Manhattan.

CUT TO:

INT. DAMADIAN'S HOME - NIGHT

DAMADIAN and DONNA.

DAMADIAN
 What about Sou Chan?

DONNA
 I don't know if he'll consent. Why don't you call your sister and ask?

DISSOLVE TO:

INT. DAMADIAN'S LAB - DAY

GOLDSMITH, MINKOFF, and DAMADIAN. SOU CHAN, an elderly Chinese gentleman, is in the magnet.

DAMADIAN

Turn on the magnet, Mike. This is it.

GOLDSMITH flips on the machine.

GOLDSMITH

Gentlemen, we have a signal.

MINKOFF

But will we see the tumor?

GOLDSMITH

There it is.

DAMADIAN

Fantastic! We did it! Cancer detection in a live person without having to cut him open. This will save countless lives.

(to Chan)

We're getting an image, Sou. I can't tell you how important this is. Are you OK?

CHAN

Yes, I'm OK, Raymond.

DAMADIAN

Let's get an complete image of it. If this isn't history, I don't know what is.

DISSOLVE TO:

SAME - LATER

DAMADIA, MINKOFF, and GOLDSMITH are looking a complete image of CHAN'S CHEST.

DAMADIAN

(pointing)

It's a terrible cancer. All over the image.

CHAN

(calls from machine)

How am I doing?

DAMADIAN
Fine, Sou. Just fine.
(suffers inwardly)
We're done. Let me help you out.

CUT TO:

INT. DAMADIAN'S OFFICE - DAY

GOLDSMITH, MINKOFF, and DAMADIAN.

DAMADIAN
I think we're at a point when we can
bring this technology to the benefit of
humanity.

MINKOFF
How?

DAMADIAN
We'll have to get an established company
interested in manufacturing it.

MINKOFF
What if we can't?

CUT TO:

CLOSE SHOT - *POPULAR SCIENCE* MAGAZINE

The issue of December 1977. The cover story features
DAMADIAN'S magnet.

DAMADIAN lowers magazine.

CUT TO:

THREE SHOT - DAMADIAN, GOLDSMITH, AND MINKOFF

DAMADIAN
Maybe this article will provoke some
interest.

DISSOLVE TO:

INT. DAMADIAN'S OFFICE - DAY

DAMADIAN, GOLDSMITH, MINKOFF, and STUTMAN.

GOLDSMITH
I don't get it. GE comes. Johnson &
Johnson comes. They express interest. But
nothing happens.

MINKOFF

You'd think they'd make some kind of offer.

STUTMAN

Maybe they have other plans.

DAMADIAN

We have the patent. And the real flying machine.

MINKOFF

Yeah, but we don't have money.

GOLDSMITH

What else is new, Larry.

DAMADIAN

We've got to bring this technology to the benefit of humanity. That's what I'm all about. That's all I really care about.

GOLDSMITH

I don't have a problem with that. But my main motivation is financial. How to we achieve some sort of commercial utility?

DAMADIAN

We can open a company based on the patent.

MINKOFF

Well, if by some chance we're successful, maybe we could make enough to do the kind of research we want to do without writing grant requests and satisfying peer-review committees.

GOLDSMITH

I want to be rich enough to do the kind of research I want to do and be left alone.

MINKOFF

Isn't that what I just said?

STUTMAN

It's certainly a goal worth considering.

DAMADIAN

There's no other way. We created this technology and can't let it just languish or be taken away from us.

STUTMAN

What do we know about running a company?

DAMADIAN

Nothing. Which seems like the ideal place to start.

DISSOLVE TO:

MONTAGE -- STILL SHOTS FROM EVENTS IN MOVIE

ANNCR VOICE OVER

Somehow, they did manage to start a company, named Fonar, which built and installed the world's first commercial NMR body scanner.

Soon substantial companies moved into the field, and a half-dozen imaging methods emerged that were different from Damadian's or Lauterbur's.

Although MRI techniques continue to multiply, every MRI image is still created by the signals from cancer tissue and normal tissues that Damadian discovered. They account for the pixel brightness. Without them, there would be no image.

Recognition finally came. In 1987, Damadian was inducted into the National Inventors Hall of Fame as the inventor of the MRI.

In '88 he received the National Medal of Technology from President Reagan with Lauterbur, whose use of sequential gradients improved the image.

Indomitable is in the permanent collection of The Smithsonian Institution, on loan to The National Inventors Hall of Fame.

CUT TO:

SHOT - MEDICAL TEXTBOOK

MRI from Picture to Proton, Cambridge University Press.
Open to page with quote and patent drawing.

ANNCR VOICE OVER:

In 2003, this medical textbook from Cambridge University Press stated, "The initial concept for the medical application of NMR, as it was then called, originated with the discovery by Raymond Damadian in 1971 that certain mouse tumours displayed elevated relaxation times compared with normal tissues in vitro. This exciting discovery opened the door for a complete new way of imaging the human body where the potential contrast between tissues and disease was many times greater than that offered by X-ray technology and ultrasound."

Later in the same year, The Noble Prize for the MRI was awarded to Lauterbur and Mansfield.

Jaws dropped, particularly at Downstate Medical Center, which had lived through his epic invention and achievements.

Yet the truth of history has survived.

CUT TO:

SHOT - HISTORY BOOK

Making Modern Science, A Historical Review. Open to quote.

ANNCR VOICE OVER: (CONT'D)

In 2005, this book from the University of Chicago Press stated, "Another technique developed during the 1970s was MRI (magnetic resonance imaging). The technique was initially developed by Raymond Damadian (1936 -), working at the Downstate Medical Center in New York.... Damadian and his fellow workers produced the first MRI scan of the human body in 1977."

Raymond Vahan Damadian, M. D. The inventor of the MRI.