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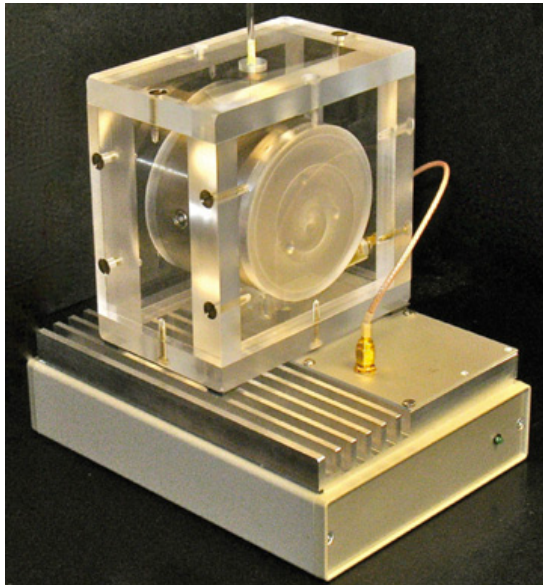
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# \$200 'Mini' NMR detects cancer faster and cheaper than full biopsies

By [Tim Stevens](#) posted Mar 1st 2011 9:34PM



Detecting cancer could be on the verge of getting a whole lot cheaper -- and better. Researchers at [Harvard](#) and [MIT](#) have come up with a device that, using a needle to get a tissue sample, has achieved 96 percent accuracy despite having a cost to produce of just \$200. It's called a mini NMR (for nuclear magnet resonance) and also gives results in under an hour, giving the good or bad news on a smartphone display. The cost, simplicity, and portability could make it much easier for cancer to be caught and diagnosed early, but naturally it still has a good bit of testing left before it'll be ready for prime time.

VIA [iMedicalApps](#)  
SOURCE [Science Magazine](#), [Mercury News](#)

491

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 **Keith Flippen** 5 hours ago

...and by "a good bit of testing" we mean being purchased by a large medical technology company and turned into a "\$15 million machine" so that the per diagnosis cost rises to \$500-\$1000 a pop. Ain't capitalism grand?


REPORT + 4 REPLY

**CIA** *Taxi\_to\_the\_Dark\_Side* 6 hours ago

If they get the price down enough they can sell them in Wal-Mart to Americans with no health care.


If they come up positive they can sneak into Canada like a runaway slave in the 1800's.

REPORT + REPLY

 **kg3000** 6 hours ago


This thing could have many more applications, right now my NMR cost me 80k and about 1k a month for upkeep....

REPORT + REPLY

 **Randy Mutia** 7 hours ago


Hope it true many can cure this machine in future. <http://tinyurl.com/6kc8ecc>

REPORT + REPLY

 **John Padilla** 8 hours ago


Could this actually lead to a consumer product? Think about the cost-savings in healthcare by not having to pay or have insurance pay exorbitant fees for biopsies and other cancer testing.

REPORT + 1 REPLY

 **rainydayinterns** 5 hours ago *in reply to John Padilla*


Compared to the cost of the treatment, testing is not the problem...still, this will help.

REPORT + 1 REPLY

 **brianlmerritt** 7 hours ago *in reply to John Padilla*


Brilliant idea!! Do you think you have lung cancer? Take a sample using the included long needle, and when you recover from passing out you can test yourself ;-)

REPORT + 3 REPLY

 **chenpofu** 9 hours ago


first guess is that they try to detect elevation of choline as a marker for cancer? in any case I agree with some of the folks who commented, this machine will not achieve nearly the specificity of biopsy. the claim is much inflated as compared to reality.

REPORT + REPLY

 **Judah Ciervo** 9 hours ago

MASHAVU!

REPORT + REPLY

 **Edueng** 12 hours ago

cool technology. Kudos

REPORT + 1 REPLY

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James Barsby 12 hours ago

Was this developed by Steorn... It looks like one of their \*cough\* perpetual motion \*cough\* machines...

<http://www.steorn.com/orbo/wha.../>

REPORT  
+  
REPLY

HTC ChaCha to be known as ChaChaCha in Spain, somebody didn't do enough market research - Engadget 110



dannyp32 13 hours ago

Haha I can imagine getting a message displayed on a phone "You have cancer" What an odd way of receiving the news that would be

REPORT  
+ 5  
REPLY

Cox breaks return cable upload record with Motorola's help, subscribers still waiting for their cable guy -- Engadget 3



zaid1357 13 hours ago

Awesome

REPORT  
+  
REPLY



commander\_keith 14 hours ago

This sounds better than cancer sniffing dogs.

REPORT  
+ 2  
REPLY



Jose Diaz 15 hours ago

I wish we had open access to the original article. Want to know which are the 4 proteins it specifically scans for, my first guess is p53, wonder which are the other 3.

REPORT  
+ 3  
REPLY



BayanSell 15 hours ago

Does this detect most types of cancer? And is the 'nuclear' part a terror threat issue?

REPORT  
+  
REPLY



Kaboof 12 hours ago in reply to BayanSell

nuclear is always a terror threat issue /i

You remember that old analog watches with the hour and minute hands glowing in the dark? It glowed because of radioactive substances inside it.. often radium.. and I never heard about a terror threat because of nuclear bombs made out of old watches. There are many radioactive substances around us that are no terror threats.

Anyway, if MacGyver knocks on your door and wants an old watch he probably plans to blow up a city, but as resistance against MacGyver is futile just give it to him and drive away as fast as possible.

REPORT  
+  
REPLY



Karim Nacer 5 hours ago in reply to Kaboof

Phosphorescent substances aren't radioactive..

REPORT  
+  
REPLY



Isaac Wong 15 hours ago in reply to BayanSell

dont know about what types it can detect, but nuclear in NMR is for "nucleus"

REPORT  
+ 1  
REPLY



hossmo 13 hours ago in reply to Isaac Wong

You're wong.

REPORT  
+ 1  
REPLY



Balazs 12 hours ago in reply to hossmo

Actually, he's not. It's quite funny really, the reason MRI machines dropped the nuclear abbreviation (ie, nuclear magnetic resonance imaging) is because of precisely that attitude, that the public would assume negative connotations upon hearing the word nuclear, when all it means is that it involves atoms in the nucleus.

REPORT  
+ 2  
REPLY



Michael Jack Davidson 15 hours ago

no doubt this will be covered up, Healthcare cant be cheap that's preposterous

REPORT  
+ 9

REPLY



**BayanSell** 15 hours ago in reply to Michael Jack Davidson

They can just use it and raise more profits that lower the price.

REPORT  
+  
REPLY



**Bryan Ollendyke** 16 hours ago

I have a hard time believing that MIT / Harvard would create something intentionally designed to be cheap (otherwise why make it so cheap) and then turn around and sell it for 1000s of dollars. Have a little faith in humanity, this could be the key to eliminating cancer as early detection leads to the best results.

REPORT  
+ 7  
REPLY



**ToyYoda** 16 hours ago

Not to be outdone, scientists at the Caltech Kennel have announced that Dogs can detect cancer. And are about as cheap and, you don't have to take a biopsy of yourself. Plus they have other benefits too like lowering stress, entertaining patients, and curing loneliness.

REPORT  
+ 4  
REPLY



**hotdogwater** 5 hours ago in reply to ToyYoda

no way can you train a dog to detect cancer for \$200

REPORT  
+  
REPLY



**commander\_keith** 14 hours ago in reply to ToyYoda

How close must the dog get, to detect colon or testicular cancer? Not even trying to be funny.

REPORT  
+  
REPLY



**ToyYoda** 6 hours ago in reply to commander\_keith

I don't know if it can detect that kind of cancer. None of the documentaries I've seen/read talk about proximity, I'd imagine it's anywhere from smelling your breath, or other excrements, to even arm's length distance, depending on the disease.

REPORT  
+  
REPLY



**npl** 15 hours ago in reply to ToyYoda

This would only be amusing if it weren't true.

<http://www.ncbi.nlm.nih.gov/pu...>

REPORT  
+ 1  
REPLY



**ToyYoda** 6 hours ago in reply to npl

While we are on the animalGadget Thread :) ... No one has ever done this experiment, but I bet you that dolphins can also detect tumor growth and other maladies that show up on an ultrasonography. In fact, they probably are better at it than any technology we have today. They probably regularly scan each other! Their ultrasound detection is phenomenal. I read they can detect thickness differences in metal plates down to a millimeter even when those plates are placed in front of them from 20 feet away.

REPORT  
+  
REPLY



**ToyYoda** 6 hours ago in reply to npl

I know it's true that's why I posted it. Seems like a dog would be just as good if not better cost effective tool for detecting cancer. I just spun it with humor to capture the engadget readers' short attention span.

REPORT  
+  
REPLY



**FroDoh** 16 hours ago

Hmmm... I just found a link to their "EZ Do-it-yourself biopsy instructions":

1. Pick up a 'Tell Me WTF's Wrong With Me Power-of-Magnets Home Diagnosis Kit™' at any participating Walmart, Radio Shack or KFC. Remember ladies, your kits are half off Thursdays after 6PM!
2. Begin by taking a few shots of your favorite libation—straight up. Swab your upper abdomen with our 'Pretty Darn Clean™' moist towelette then 'anesthetize' the surrounding skin with our included can of Mr. Freeze™ compressed air—its made in Austria and gets really, really cold!
3. Plan and practice your biopsy approach with the included 'PeeWee's Favorite Organ

REPORT  
+ 9  
REPLY

doll'—when confident, advance our patented 17 cm 'Biop, See?'™ needle directly into your spleen in a single swift, authoritative manor—Be extra careful to avoid those pesky 4 or 5 surrounding organs! Plus-sized and XXXL customers may need to employ our Harpoon Extender™ kit. Cock, then thumb activate the spring-loaded corer, which abruptly—some say, "alarmingly"—plunges an additional 2.5 cm into the depths of your disease ridden organ—If you misjudged your 'shot', ie, the needle is now extending completely through your body into the friend supporting you from behind, you can always adjust as needed—or simply analyze his specimen—odds are he's just as diseased as you are! And remember: There is no 'wrong way' to sample your own tissue.

4. Remove the inner trochar. Then, employing our unique shop vac attachment, suck out the worm-sized splenic pulp specimen.

5. Forcefully eject the specimen into the Mini MRI's maw with the included Crack-Master™ syringe, close the lid and turn on the juice—Then stand back. baby— our magnets are at work!

6. Once the smoke clears (2 to 5 hours), download that delectable diagnostic data directly into your smartphone via the optional semi-universal cable (Apple, RIM and Android not yet supported—litigation pending).

7. Wait 6 to 7 days while your Strong ARM processor is brought to its knees performing countless Fourier transformations and other data conversions—the bulk of which are related to billing and spamming all your contacts we've mined.

8. Finally, your diagnosis is displayed as a series of pathological probabilities which are \*increasingly accurate as you purchase in-app booster packs\*! So, buy one, buy two! Buy as many as you want!

9. Repeat as needed for your remaining 15 organs (14 for Gizmodo readers).

10.. If things look really bleak—and they probably will given Big Insurance's reluctance these days to pay for pretty much anything—you may wish to try our Dr. Jack Kevoikian approved 'Just Kill Me Now™' suicide kit! Trial kits bring you just to the brink of death—but trust us—you'll have to pay for the Full Monty!



**Cornerstar31** 15 hours ago in reply to FroDoh

Awesome review

REPORT  
+  
REPLY



**Michael King** 16 hours ago in reply to FroDoh

wow, so much effort for something so incredibly not amusing.....

REPORT  
+ 5  
REPLY



**FroDoh** 16 hours ago in reply to Michael King

So... you're trying to tell me you want you 200 bucks back?

REPORT  
+ 2  
REPLY



**David Hird** 16 hours ago

I absolutely fail to comprehend this. If it is looking for specific N or H peaks found in cancer altered proteins - that's fine. However, where is the liquid helium, surely this magnet isn't anywhere near strong enough to get a decent signal to noise ratio - would it not just be a terrible mess of peaks all on top of each other. Unless the peaks in said proteins are coupled in such a way that they appear at super high/low ppm values, visible in even the lowest magnetic fields. Does anyone who knows about this care to enlighten?

REPORT  
+ 1  
REPLY



**edget** 16 hours ago in reply to David Hird

I don't have access to the original article at the moment, but they are using nanoparticle contrast agents. Also, since the size of the sample is so small (needle biopsy on the order of 1 mm?) it is trivial to establish a very strong magnetic field. Neodymium magnets you can get at hardware stores are around 1 Tesla. You start to need liquid helium-cooled superconducting magnets as the size of the object to be imaged increases (think hundreds of millimeters), since the strength of a magnetic field drops as the cube of distance.

REPORT  
+ 3  
REPLY



**xku52abc** 16 hours ago

[madeshopping.net/](http://madeshopping.net/)

REPORT  
+



REPLY



*D.Vishwa Vardhan* 16 hours ago

really great especially for the poor, great going Harvard and MIT

REPORT  
+ 1  
REPLY



*D.Vishwa Vardhan* 16 hours ago

really great especially for the poor, great going Harvard and MIT

REPORT  
+  
REPLY



*zubbazoo* 16 hours ago

NMR != MRI to be more accurate. NMR is an analysis technique, MRI is a way to apply NMR to create an image.

NMR gives you a spectrum indicating the chemical composition of whatever you're analyzing. helpful to identify a single chemical but not to characterize the structure of human body tissues the way MRI does. This device can be small (relative to an MRI) because it doesn't create images, it's analyzing a biopsied sample. What it actually analyzes is apparently not important to share with us in this post, but it's much simpler than an MRI and thus probably won't cost \$1500 the way an MRI does.

REPORT  
+ 2  
REPLY



*edget* 16 hours ago in reply to zubbazoo

FDA certification of a device is extremely expensive, and of course a good chunk of the cost of an MRI goes to the radiologist to interpret the results. So...who knows how much it will cost, but it will have absolutely no relation to the \$200 cost cited in the article.

REPORT  
+  
REPLY



*Leo August* 17 hours ago

Who wants to bet some big company will snap up the rights to this device and charge \$250,000 for each one. Either that or hospitals will charge \$15,000 for the procedure - or both.

So sayeth the cynic.

REPORT  
+ 8  
REPLY



*tekdaemon* 15 hours ago in reply to Leo August

They won't charge \$15,000 for the procedure but in all likelihood you'd still have to confirm any diagnosis this gave with a biopsy anyway, and the other problem is that you're likely to miss a lot of cancers since it's not exactly super easy to stick a needle perfectly into a tumor when you're not sure where it is to begin with. The equipment and people needed to figure out exactly where to put that needle aren't cheap so even though this machine is \$200 it's not really any cheaper than any other fine needle biopsy. So basically it's just an improvement on what you can get out of a small sample in a fine needle biopsy-it might be better than having someone try to read such a small sample but it's really unlikely to be better than actually taking out the tumor, then slicing it up and checking it.

REPORT  
+ 1  
REPLY



*Leo August* 15 hours ago in reply to tekdaemon

You're probably right. But, my point was that the medical establishment is not likely to pass on the savings realized from such an inexpensive device.

REPORT  
+  
REPLY



*scxfan* 16 hours ago in reply to Leo August

Probably true.

Hospital wouldmstill charena fewmgrand to get the results.

It's the way the criminal health care system has been running for years.

REPORT  
+  
REPLY



*Few Tem* 17 hours ago

This should in the headlines of BBC or Reuters , alas .

REPORT  
+  
REPLY



Nathan Jordan 17 hours ago

Sooooooooo its a pocket-sized MRI machine?

Fun fact: Before it was called an MRI, it was called NMRI, or Nuclear Magnetic Resonance Imaging, but people don't like "Nuclear" so it got dropped

REPORT  
+  
REPLY



aiden9 17 hours ago in reply to Nathan Jordan

I'm sure the name will have to be changed for this device as well. A group of people will start crying about how its nuclear and how it doesn't detect cancer just causes it."No its just a conspiracy by the medical companies to cause cancer!"

REPORT  
+  
REPLY



Kaboof 12 hours ago in reply to aiden9

and they will tell all their friends through their smartphone... with a high SAR sign, because they need reception and more SAR means more reception!  
I hate clueless people..

REPORT  
+  
REPLY

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