

A promotional banner for Betty Mills Snack Rewards. On the left, there is a yellow starburst graphic with the text "Betty Mills Snack Rewards". In the center, the text reads "Earn Snack Rewards™ with every Betty Mills purchase!". On the right, there is an image of a box of Betty Mills snacks and a "VIEW DETAILS" button.

Using DNA to Track the Spread of Bedbugs

New research from two international teams will help unravel the origins of infestations

By [Brooke Borel](#) Posted 07.16.2012 at 9:53 am



Bed Bug [Gilles San Martin](#)

Independent research teams from the U.S. and the U.K. are developing genetic techniques similar to those used in forensics labs to trace the ancestry of the bedbug. The work may help map the spread of the pesky bloodsucker over the course of the continuing global resurgence, as well as lead to DNA tests for use in lawsuits and other bed-bug-related disputes.

Both teams are using DNA genotyping to look for genetic markers called microsatellites, which are regions in the genome where base pairs—which make up the alphabet of DNA—are repeated. Both the father and mother pass on these repeated sequences, or slight variations of them, to their offspring. This means the microsatellites can identify individual bugs, as well as “help show how individuals in a population are related,” says Warren Booth, a molecular ecologist at North Carolina State University, which is heading the U.S. collaboration.

The NC State team has sequenced bedbug DNA from 21 sites along the East Coast of the U.S., [publishing their results](#) in the *Journal of Medical Entomology* earlier this month. The researchers found significant genetic diversity between populations, which seems to support the theory that bedbugs are coming in from more than one source, as well as low diversity within specific populations, indicating that an infestation can start with a single female whose offspring then inbreed. With the help of pest control companies Orkin and Rentokil, as well as bedbug experts from around the world, the team is collecting additional samples from the U.S., Canada, Australia, South America, Europe, Asia and Africa to map the bugs’ relationships on a larger scale.

The U.K. team, led by researchers at Sheffield University, presented their own preliminary results last week at the [First Joint Congress on Evolutionary Biology](#) in Ottawa, Canada,

but couldn't share information on specific diversity patterns with *Popular Science* (the work should publish as a PhD thesis in the coming months). The team is working primarily in neighborhoods around London. Soon, they will add samples from Kenya to see whether the theory that the U.K.'s resurgence originated from Africa holds up.

NC State's markers are publicly available, and Sheffield's will be as soon as their work is formally published, which means anyone with the right equipment and know-how will be able to map their own bedbug populations. With the increase in bed bug lawsuits between landlords and tenants, or between hotels and itchy guests, the technology could eventually help sort out where a bedbug infestation came from and who is responsible.

Brooke Borel is a contributing editor at Popular Science and is writing a book about bedbugs for the University of Chicago Press. Follow her on Twitter @brookeborel

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10 COMMENTS



Robot

07/16/12 at 10:05 am

The cost of DNA testing is very minimal now adays. I like to see the tagging of all illegal aliens caught in this country as they are process out.

Tolerance to illegal aliens and their children, only encourage bad behavior to continue for the future. It is a reward to grant residence to the illegal alien children and illegal aliens, with illegal use and abuse of the USA citizen tax payer.

It idiotic to give perks, benefits to anyone for bad or illegal behavior.

The Presient allowing illegal aliens residency for their illegal parents being in our country, is indirectly encouraging bad illegal behavior for the future and abusing the the taxes and benefits of the good legla children going to our schools, of which the good legal taxpayers pay for!

It is time to DNA TAG the illegals and show them the exit, bed bugs included.

[Link to this comment](#)

Escape

07/16/12 at 1:21 pm

@Robot

Wow Robot you sure seem to live up to your name, a creature whose beliefs are based on those that were fed to him. Maybe if you knew how illegal aliens really lived you would realize that "USA citizen tax payer[s]" aren't the only ones paying federal taxes. Many(as in 80%+) have a identifiable tax number that they use to voluntarily pay all federal, state, and local taxes.

In fact did you know that these "illegal aliens" actually make money for America?

Here are some facts not just opinions:

-Since illegal immigrants often have fake documents, including fake Social Security numbers, the money they pay into the system is money that will never be withdrawn meaning that they pay \$20 to \$30 billion more than the amount of government services they use.

-In addition to the consumer spending of immigrant households, immigrants and their businesses contribute \$162 billion in tax revenue to U.S. federal, state, and local governments.

-In Silicon Valley, companies begun by Chinese and Indian immigrants generated more than \$19.5 billion in sales and nearly 73,000 jobs in 2000

-Within ten years of arrival, more than 75% of immigrants speak English well; moreover, demand for English classes at the adult level far exceeds supply. Greater than 33% of immigrants are naturalized citizens; given increased immigration in the 1990s, this figure will rise as more legal permanent residents become eligible for naturalization in the coming years. The number of immigrants naturalizing spiked sharply after two events: enactment of immigration and welfare reform laws in 1996, and the terrorist attacks in 2001.

So please lets not be biased here and make sure we get both sides and all the facts..

[Link to this comment](#)

-From 1986 to 1998, the Border Patrol's budget increased sixfold and the number of agents stationed on our southwest border doubled to 8,500. The Border Patrol also toughened its enforcement strategy, heavily fortifying typical urban entry points and pushing migrants into dangerous desert areas, in hopes of deterring crossings. Instead, the illegal immigrant population doubled in that period, to 8 million - despite the legalization of nearly 3 million immigrants after the enactment of the Immigration Reform and Control Act in 1986. Insufficient legal avenues for immigrants to enter the U.S., compared with the number of jobs available to them, have created this current conundrum

-Most of the 9/11 hijackers were here on legal tourist or student visas (but some did overstay on those). Since 9/11, the myriad of measures targeting immigrants in the name of national security have netted no terrorism prosecutions. In fact, several of these measures could have the opposite effect and actually make us less safe, as targeted communities of immigrants are afraid to come forward with information.

-It's fair to assume that industries that are largely dependent on the hard work of illegal immigrants would collapse, or at least suffer a major setback.

If you want more information you can also check here

<http://www.washingtonpost.com/wp-dyn/content/article/2010/04/30/AR2010043001106.html>

Now from what I have just said to you it might seem as though I am an advocate of illegal immigrants, but that is not the case as I am just a pursuer of the truth. Many people hear biased opinions with no bases and then in turn create their own false opinions and lies. Of course you might say that anyone can cut and past, but the difference between you and me is that one has facts while the other has opinions.

It is true that many seek to abuse the system but is it really only one sided? Is it not true that many, many natural born legal citizens abuse the system for their advantage? Hell you probably believe that all Asians know kung fu, that all Irish men drink a lot, that all Blacks like kool aid because of course you dont take time to understand, just judge.

I guess its only natural that a article about DNA and bedbugs turned into something controversial such as immigration but this is the internet...



Robot

07/16/12 at 1:48 pm

While you do type your opinions as if they are facts, it would be most helpful of you could also point to the source of those facts you manufacture. Though, if I squint my eyes, I suppose in an odd ball way I can see your point of view.

You exaggerations, assumptions are also you own.

My opinion originated from how cheap and easy it is to make use of DNA testing. DNA testing now is even use for general criminal cases, simply because the cost is so low, ie. " Mr. So and So, we have your DNA at the seen of the crime."

The overall point of my comment above was to NOT reward bad or illegal behavior. I suppose you find that concept offensive and are pursward by the monies of there illegal behavior.

I suppose, I am also peaved that President Obama really did this just to get votes and all a political maniputive tactic, which I hope back fires to him. What he did is only a temporary measure of 2 years. You know, to get votes. It may inspire some miniorites to vote for him, maybe, but it can also inspire those that feel manipulated to get off their duffs and vote agains him too.

[Link to this comment](#)



Robot

07/16/12 at 2:21 pm

Escape,

Your persuaded by money, the same as all the business in the USA that employ illegal aliens and nuture the problem. Your putting a blinds eye to bad or illegal behavior, because somebody stuffs some dollars down someone else pocket. This indirectly encourages continuation of bad and illegal behavior too.

[Link to this comment](#)



Space

Vapur9

Escape

My point was to clearly identify illegal people via DNA testing and identification, to clearly show them that there is no opportunity in the US for illegal behavior, despite the business that employees and exploit them.

I am personally FOR legal immigration and law-abiding citizens. I have a diverse heritage of my own and so does my wife. My spouse is a legal immigrant.

07/16/12 at 2:47 pm

Bed BUGS! The devil seed! EW!!!!!!

.....
See life in all its beautiful colors, and from different perspectives too!

[Link to this comment](#)

07/16/12 at 3:58 pm

@Robot *Ahem* Just because something is illegal does not make it unethical. Imagine if it were illegal to harbor Jews?

[Link to this comment](#)

07/16/12 at 5:06 pm

@Robot

Oh please don't preach me to about morals. You want to TAG people, human beings, like animals.

In fact in your closing sentence you are basically making illegals on the same level as bed bugs, as insects. "It is time to DNA TAG the illegals and show them the exit, bed bugs included."

You also say how I only see it in a monetary point of view when half of your original argument was based on monies.

Example 1. "with illegal use and abuse of the USA citizen tax payer."

Example 2. "It is idiotic to give perks, benefits to anyone for bad or illegal behavior."

- If by perks you mean allowing them a way to become legal citizens are you not being redundant? Or are you talking about welfare and food stamps which then of course means your talking about money, which then makes you a hypocrite.

Example 3. "The President allowing illegal aliens residency for their illegal parents being in our country, is indirectly encouraging bad illegal behavior for the future and abusing the taxes and benefits of the good legal children going to our schools, of which the good legal taxpayers pay for!"

- His new executive order doesn't help anyone that's been here newly. Only those here 5 years ago and younger than 30 with the majority being brought here through no choice of their own. But of course that's not the main point for you because you clearly are talking about how the legal children of this country are losing benefits that legal taxpayers pay for? That's weird since illegal immigrants are paying for those too.

.....
And now to close this up..

"You're persuaded by money"

- Of course I am what sane person isn't? It's how the world works, but clearly you are too.

"The same as all the business in the USA that employ illegal aliens and nurture the problem. You're putting a blind eye to bad or illegal behavior, because somebody stuffs some dollars down someone else's pocket."

- Wow that's true, employing people who are willing to do the jobs that no one else is such a bad idea (Sarcasm). Are you not the one with the blind eye to the real problem in America? The disproportion between the 99% and the 1% is ridiculous yet everyone seems to be focused on the people that do much of the hard labor this country NEEDS to survive.

And finally...

"I have a diverse heritage of my own and so does my wife. My spouse is a

[Link to this comment](#)

legal immigrant."

Wow great for you! Your the same as every other American! Your argument for how you are for legal immigration is the same as a person saying they have a black friend so its ok for them to say the "N word."

And if you are for legal immigration then you should be happy with Obama's executive orders since it is a path for legal immigration. Yet you seem so blinded, why?

P.S I just couldn't let this one go cause I feel just as strongly..

"I suppose, I am also peaved that President Obama really did this just to get votes and all a political manipulative tactic"

I also felt the same way but then again he didn't just do this out of the blue. He had been trying the Dream Act for a long time and now that elections are coming up he decided to finally act. But of course it is obvious that he did do this for votes, at least its a step and it will really help a lot of young people.

Sure we can blame Obama for doing this for his own interest but then again what politician isn't? As many members running for office seek money to finance their campaign they make promises to huge corporations and in the end its we the people that get screwed over. Why in the world would a tank cost \$80 Million dollars? Why in the world would 1 plane cost 1 Billion dollars? Sure we can say because of research and technology but any rational person can tell that's not true.

This is what America is, and it is what it has become. Please fight for the things that matter, not false lies.

07/16/12 at 5:52 pm

Thank you, sir!

You and I and others are entitle to our opinions and I like when people comment.. Take care. ;)

[Link to this comment](#)

07/17/12 at 7:38 am

Escape,

It is with clear identification, we can use the tool of DNA identification to help stop and prevent current and future criminal illegal behavior. The same tools of camera and finger printing are use for a great many years. I can only imagine you are oppose those tools of a criminal illegal history and intent. You arguments are just the benefit of illegal immigrants and the luggage they bring to the USA. Still, I like apposing points of view and free speech and in that I encourage your voice too.

Finally, thank GOD or goodness for a democracy and the vote! The people at large can read mine, your and other people opinions and hopefully come up with good fair solutions to the illegal problems and it motivations.

[Link to this comment](#)

07/19/12 at 1:02 pm

Regardless of most of the comments, we take dna from felons at least in certain cases and circumstances. I'm not saying I would trust anyone to keep this database but if they decide to take dna from illegal immigrants then they should at least have to follow the laws. Hopefully without making new and ridiculous ones that give too much authority or power. Besides, I'm sure some wouldn't consider residency a benefit.

[Link to this comment](#)



Robot



Robot

malvitz

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