Abstractions

FIRST AUTHOR
At first, Thomas Hnasko's plan to look at dopamine, pain and morphine addiction in mice was met with a measure of scepticism.

A graduate student in the neurology and behaviour lab at the University of Washington in Seattle, Hnasko had trouble convincing his principal investigator, Richard Palmiter, that his project was a good idea. But when Hnasko explained that he planned to contravene conventional wisdom in the field, Palmiter was intrigued.

Hnasko suspected that release of the neurotransmitter dopamine is not absolutely essential as a 'reward' in mice that are addicted to morphine. Using mice that cannot produce dopamine, Hnasko tested their craving for morphine and measured their response to pain — assessed using the 'tail flick assay'. The results, published on page 854 of this issue, show that he was right. *Nature* caught up with Hnasko to find out more.

How did you come up with the idea to examine this issue?
I came to the lab with a background in pharmacology and an interest in the biological processes underlying addiction. The literature suggesting a role for dopamine in response to opiate drugs, especially their rewarding aspects, was conflicting.

I decided that finding out whether a mouse that cannot produce dopamine liked morphine would be a powerful way to shed some light on the problem.

And why tail flicks?
It's about the only pain assay I could think of that wouldn't be confounded by the motor deficits of the dopamine-deficient mice.

How did Palmiter help you with this work?
He had a big influence on the experimental designs and has been tremendously inspiring to work with.

What do you think about when you're not pondering dopamine, addiction and pain?
Lately I've been anxiously thinking about the next step in my career. On more carefree days I'm plotting my next holiday — preferably somewhere near a river where I can practise my fly cast.

What's next for you?
For the project, I'm doing some experiments to see whether the conclusions we've drawn on opiates extend to other drugs of abuse that are thought to act more directly on the dopamine system, such as cocaine.

For me, I'll be defending my dissertation this spring and am currently planning my next destination. ■

MAKING THE PAPERS

Jean-Pierre Lebreton

Cassini-Huygens mission to Titan is a success for deep-space exploration.

Space exploration is a risky business and things don't always go according to plan. But fortunately for Jean-Pierre Lebreton and an international team of more than 100 scientists, their mission was a success.

They have published the first papers from the Cassini–Huygens mission to Titan, Saturn's largest moon (see pages 758–802). Titan's environment is thought to be similar to that on Earth before life emerged. Scientists landed a probe on Titan to learn more about the composition and properties of its atmosphere and surface, hoping to provide clues about Earth's primeval conditions. Thanks to the success of this mission, "we know we have the data we need to fulfil our objectives, which were set out 20 years ago", says Lebreton, project scientist with the European Space Agency (ESA) and the mission's manager.

The idea for the mission came about not long after Voyagers I and II returned images of Titan in the early 1980s. ESA, NASA and the Italian Space Agency launched the Cassini orbiter and the Huygens probe as a joint mission in 1997. The spacecraft took seven years to reach Titan.

For Lebreton and his colleagues, 14 January 2005 was judgement day: the day that the probe would descend through Titan's thick atmosphere and land on its surface. It would collect data for six experiments during the descent and on the surface, and transmit them to Earth through the Cassini orbiter.

That day, excitement and nerves pervaded the mission control centre in Darmstadt, Germany. The last time the scientists had heard from the Huygens probe had been three weeks earlier. "We were hoping for the best, but were also prepared for something terrible — such as never hearing from the probe again," says Lebreton. In fact, at around 11:20 local time, they received the first signals from the probe, indicating that it was working properly. "It was very emotional," says Lebreton. "Some people were crying."

Data began streaming in by the early evening and scientists were at the ready to analyse it. But they were anxious to see the first images of Titan's surface, which finally arrived at around 20:45. Seeing pictures of the desert-like landscape, "was the most rewarding moment of the day", says Lebreton.

The only major hitch was losing one of the two radio links between the probe and the orbiter. The receiver for 'channel A' on the orbiter did not turn on during the probe's descent, because its 'switch-on' command was never included in the sequence loaded on to the orbiter for this mission. Scientists lost data because of this missing channel, but managed to salvage some through 'channel B'. A network of radio telescopes on Earth picked up faint signals directly from the probe and gave scientists the information they needed to complete the experiments.

But in other ways the mission far exceeded scientists' expectations. For example, they received data from the probe on Titan's surface for 72 minutes. "We would have been happy with three," says Lebreton.

Analysis of the bonanza of data is ongoing and will continue for years to come, he says. "We still have a lot to learn." But they've already overcome the biggest hurdle: getting the data in the first place. ■

QUANTIFIED **BOTSWANA**

A numerical perspective on *Nature* authors.
Susan Ringrose is a professor in water resource management at the Harry Oppenheimer Okavango Research Centre in Botswana. She has worked all over the world, studying the use of natural resources. But being in Africa is different, she says, because the issues are closer to ordinary people's lives and she can make a direct contribution to the local community.

Ringrose says that she and her colleagues get a local perspective on the issues that are the focus of their research, such as ecosystems, governance and tourism. These viewpoints often differ from those of international researchers, she says, making the need for joint collaborative work crucial.

One of Ringrose's recent collaborations with researchers worldwide reports details of the primary factors influencing African savanna ecosystem structure (see page 846).

1 paper with contributing authors from Botswana has been published in *Nature* during 2005.

3 papers published in *Nature* in the course of 2005 have reported findings from Botswana.

30 authors working in Africa have published their research in *Nature* this year (total number of authors = 5,641).

44 submissions this year have been made to *Nature* from Africa.