Jaguars, though, definitely exist, and — like many mammals — have a pattern of spots that fascinates and tantalizes.

Understanding the origins of variegated colour patterns in mammalian fur is an abiding problem in biology. Other animals adopt a range of pigments, and even use optical effects such as iridescence to lend a chromatic gloss, yet the mammalian palette is mainly monochrome. A patch of skin either contains melanocytes, or it doesn't.

This week, researchers report in *Nature* some progress on the problem with the African striped mouse, *Rhabdomys pumilio* (R. Mallarino *et al. Nature* http://dx.doi.org/10.1038/nature20109; 2016). This creature has a stripe on either side of its spine, each a sandwich of light-coloured hair between two outriders of pure black. The rest of the mouse is an intermediate shade, except for a pale belly. The pattern starts to emerge long before a mouse is born.

The difference is down to gene expression. The white stripes are enriched in transcripts of *Alx3*, a transcription factor, which curbs the activities of a gene called *Mitf*. If left unhindered, this gene would allow melanocytes to differentiate and produce dark pigment.

As model organisms go, *R. pumilio* is very different from the laboratory mouse. Even further removed is the Eastern chipmunk, *Tamias striatus*. Chipmunks are more closely related to squirrels than to mice: the last common ancestor of mouse and chipmunk lived when dinosaurs did. Yet the formation of chipmunk stripes is governed by essentially the same processes that create the patterning in mouse skin, even though the mechanisms might have evolved independently in each case.

Study of the chipmunk shows other genes involved. Expression of one called *Asip* in lighter areas, another called *Edn3* in darker, show that patterning is not down to a single genetic interaction. The work of *Edn3* and other genes, we know, writes the script of spots and stripes in cats, from tabbies to cheetahs (C. B. Kaelin *et al. Science* **337,** 1536–1541; 2012) — and so, presumably, in the coat of the jaguar that Tzinacán longed to decipher.

Much remains to be learnt. The stripes of mice and chipmunks don't occur in the same places on the animal, and scientists still do not understand why the grass mouse *Lemniscomys rosalia* has only one stripe, whereas the ground squirrel *Ictidomys tridecemlineatus* has thirteen. The God's script comes in many dialects.

Skin pigmentation is superficial — literally — but the genes that create these patterns often have other, more profound purposes. The skin and hair of vertebrates derives from the neural crest, an embryonic tissue unique to vertebrates, which, migrating from the edge of the neural plate as it rolls up to create the spinal cord, interacts with tissues all over the body to create structures seen nowhere else in the kingdom of life. The neural crest sculpts not just hair, teeth and skin, but a long list of attributes, from the bones of the face to the nerves that line the intestines, parts of the heart and adrenal glands, and many crucial components of our sense organs. This is why oddities of skin pigmentation sometimes betoken deeper ailments. It explains why cats that are white are more than usually likely to be deaf.

"Oddities of skin pigmentation sometimes betoken deeper ailments."

So much is clear for *Alx3*. Mice deficient in this gene show a range of neural-tube closure defects, the incidence of which is reduced by folic acid (S. Lakhwani *et al. Dev. Biol.* **344,** 869–880; 2010). This may explain why human mothers deficient in this vitamin run the risk of giving birth to babies with spina bifida. Again in humans, recessive mutations in *ALX3* produce a series of facial malformations called frontorhiny, also related to failure of the facial bones to knit properly (S. R. F. Twigg *et al. Am. J. Hum. Genet.* **84,** 698–705; 2009). The script runs deep, with many layers of meaning.

Did Tzinacán finally decipher the God's script? The answer is yes: the jaguar's fur encoded a spell which, if recited out loud, would make the prison vanish. But Tzinacán chose not to use it because, in the act of decipherment, he became a god himself. ■

Get real

Researchers must show policymakers that scientific evidence is far from academic.

Grammar and Twitter rarely sit happily, so it would be churlish to point out that when the Welsh MP Glyn Davies tweeted at the weekend: "Nothing more irritating than academics rubbishing the efforts of those operating at the sharp end, without facing up to the hard decisions", he was inadvertently complaining that people at the sharp end (himself included presumably) do not confront hard decisions.

Besides, the next social-media missive from Davies made his position clear: "Personally, never thought of academics as 'experts'. No experience of the real world." His first point there might — just — be semantically defensible: academics, by one definition, are full-time scholars; whereas experts can be classed as those who have learned not through study but through experience. But it was his second assertion that prompted most of the angry backlash, and the inevitable hashtag response #realworldacademic that was still going strong as *Nature* went to press.

(Replies to Davies ranged from "Practiced medicine in Intensive Care Unit and emergency medicine while I was doing a PhD" to "Dude, you literally work in a palace".)

There's no need for *Nature* to tell its readers — mostly academics — that they have experience of the real world. They live it every day; and, for many, the realities of this academic life are starting to bite down hard. As we explored in a special issue last week, the real world of academia for many young researchers is insecure and under increasing pressure. Many are looking to leave. (And when they do, Davies and others please note, they seem to flourish.)

The popular image of an academic as aloof, privileged and out of touch — if it ever was true — is now redundant. But then so is the popular view that backbench MPs are, well, aloof, privileged and out of touch. In most cases, both groups work harder, and with more selfless goals, than critics claim. By their nature, those who study the science of what is probable will come into conflict with those who practise the art of what is possible. But researchers, along with everybody else who criticizes policymakers and elected officials, should remember that, as Davies seemed to be trying to point out, it is one thing to discuss problems and recommend solutions, and quite another to have to make and implement decisions.

One reason that the MP's comments seem to have struck a nerve is that they feed into the popular idea — fuelled by the Brexit campaign and the rise of Donald Trump — that politicians, and by extension the wider public, have shifted away from reason and evidence. In a recent World View column, Bill Colglazier, a former science adviser to the US government, argued that this perception could be explained by differing attitudes to evidence — and on this point researchers seem to have some common ground with Davies.

Criticized last month for attending a lecture by the prominent climate sceptic Matt Ridley at the prominent climate sceptic organization the Global Warming Policy Foundation, Davies wrote on his blog: "I do not think Government policy should be based on a partial view of science. I like to make judgements based on evidence … In the end, governments the world over will be guided by evidence — or science delivered as evidence."

The conflict between Davies' support for evidence and his Twitter dismissal of those who seek and provide evidence seems, in the real world, to make for a curious paradox. Perhaps an expert could look into it. ■