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**Scientists find why it's tough to teach old dogs new tricks**  
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SCOTTISH scientists have discovered why we find it easier to learn things we already know about - but struggle with newer subjects.

The researchers, from Edinburgh University, said people would assume it was simpler to pick up on unfamiliar information as it was arguably newer and more interesting.

But they have found that adding to things we already have some knowledge of is much easier.

The key to this learning conundrum appears to be down to how certain parts of our brain respond to new and old information.

The Edinburgh team used animal experiments to focus on what was happening in the brain during different types of learning.

The animals were either presented with a maze test with which they were familiar or one that was completely new.

Looking at what was happening in their brains, the scientists discovered that building on knowledge already possessed activated a key set of genes found in the brain which were important to learning.

But these so-called "plasticity" genes did not respond as well to subjects of which there was little knowledge, according to the study in the journal Science.

The scientists, working with colleagues in Tokyo, said this made it more difficult for people to form new memories about unfamiliar topics, meaning we have to work extra hard to get them to lodge in the grey matter.

Lead researcher Professor Richard Morris, from Edinburgh University, said: "This curious effect is seen in a specific part of the cortex [area of the brain] whose functions are still poorly understood, so there is still much work to be done.

"But a combination of biomedical and human brain imaging work has this as a key aim for future research.

"We also plan to look at how professional knowledge is gradually acquired and organised in the brain."

Prof Morris said many people believed you learn best when something novel happens, making it easier to remember.

"But there's a paradox in that if we have an established body of knowledge, like a child who knows football teams backwards, they seem to be able to assimilate new information relevant to that background knowledge much more easily than the rest of us would."

"They can remember some odd goal or player.

That kind of information is not really novel as it is quite closely linked to the person's body of knowledge, and the same applies in the professional field whether you're in academic life or the legal world.

"The tests found that learning this kind of information where there was already some knowledge base activated the genes in the brain, while trying to pick up new information did not, making it more difficult to remember."

Prof Morris said in future they hoped the findings could help lead to new educational strategies to boost learning.

"So much of what we do in the educational world is based on past experience rather than on really informed knowledge of how the brain learns in terms of these plasticity genes," he said.

"So we would like to think we are getting a handle on the mechanisms by which we can most easily assimilate new information and this could have repercussions for the way we might think about optimal ways of designing education courses."