New research touches a nerve

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University of Queensland researchers have traced the origins of one of the most important steps in animal evolution – the development of nerves.

Professor Bernie Degnan, from UQ's School of Integrative Biology, together with PhD student Gemma Richards and colleagues from France, have traced the evolution of the nerve cell by looking for pre-cursors in, of all places, the marine sponge.

"Sponges have one of the most ancient lineages and don't have nerve cells," Professor Degnan said.

"So we are pretty confident it was after the sponges split from trunk of the tree of life and sponges went one way and animals developed from the other, that nerves started to form.

"What we found in sponges though were the building blocks for nerves, something we never expected to find."

Professor Degnan said the science involved came from the relatively new area of paleogenomics, which is the study of ancestral genomes to paint a more accurate picture of animal evolution.

"What we have done is try to find the molecular building blocks of nerves, or what may be called the nerve's ancestor the proto-neuron," he said.

"We found sets of these genes in sponges, when we really didn't expect it.

"But what was really cool is we took some of these genes and expressed them in frog and flies and the sponge gene became functional – the sponge gene directed the formation of nerves in these more complex animals.

Source: Research Australia