'Trying to recreate Neanderthal minds' using minibrains

[R]esearch teams are engineering stem cells to include Neanderthal genes and growing them into "minibrains" that reflect the influence of that ancient DNA.

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[Geneticist Alysson Muotri's] team has coaxed stem cells endowed with Neanderthal DNA into pea-size masses that mimic the cortex, the outer layer of real brains. Compared with cortical minibrains made with typical human cells, the Neanderthal organoids have a different shape and differences in their neuronal networks, including some that may have influenced the species's ability to socialize. "We're trying to recreate Neanderthal minds," Muotri says.

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Muotri focused on one of approximately 200 protein-coding genes that differ between Neanderthals and modern humans. Known as NOVA1, it plays a role in early brain development in modern humans and also is linked to autism and schizophrenia.

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Comparing them with modern human brain organoids made under identical conditions, his team found that the neuronal cells with the Neanderthalized NOVA1 migrate more quickly within an organoid as they form structures.

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Several of these differences mirror what Muotri has found studying neuronal development in the brains of children with autism.

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"In modern humans, these types of changes are linked to defects in brain development that are needed for socialization. If we believe that's one of our advantages over Neanderthals, it's relevant," [Muotri said].

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