



JUNE 9 2016

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'Rock star in a petri dish': Guy Ben-Ary harvests cells to create an external brain to play music



Andrew Taylor

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Dreams of musical stardom usually begin with endless hours of practising scales and mastering *Chopsticks*. But Guy Ben-Ary began his search for fame with a scalpel and sutures to harvest flesh from his arm.

"I never thought that I would subject myself to an injury for my art but I did," he says. "A biopsy is a very light medical procedure but still extreme for me. I think it was worth it."



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Guy Ben-Ary, pictured with musician Clayton Thomas and cellF, the body that holds his "external brain: "I never thought that I would subject myself to an injury for my art but I did". Photo: Janie Barrett

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An artist and researcher at SymbioticA: the Centre for Excellence in Biological Arts at the University of WA. Ben-Ary was researching the

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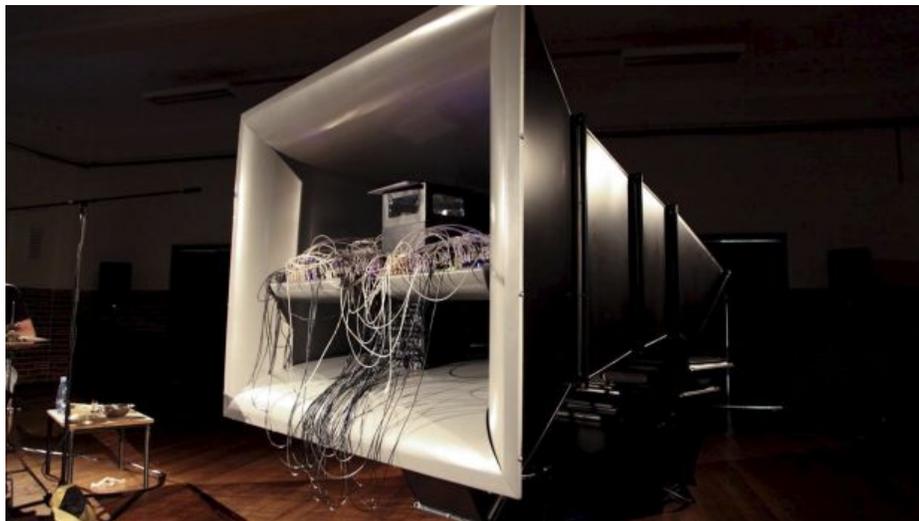
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intersection of art and science when he decided to create "a rock star in a petri dish".

"The decision to create a sound-producing body was based on a long-standing passion for music and sound, combined with my naive childhood dream of being a rock star," he says.



Guy Ben-Ary calls cellF the "world's first neural synthesizer". Photo: Guy Ben-Ary

Collaborating with scientists and engineers in Australia and overseas, Ben-Ary transformed the skin cells taken from his arm into stem cells. Further manipulation of the cells turned them into neural stem cells or as Ben-Ary says, "my external brain".

Ben-Ary says his manufactured brain is symbolic, containing about 100,000 neurons compared to a human brain, which has about 100 billion.



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"But these neural networks do produce a tremendous amount of data, respond to stimuli, exhibit properties of plasticity and are subject to a lifespan," he says.

Like Victor Frankenstein, Ben-Ary's next step was to create a body for his brain comprised of analogue synthesisers that can improvise with human musicians.

A tangle of electrical cords housed inside what looks like a large megaphone, cellF is not as monstrous as Frankenstein's creation.

Ben-Ary calls cellF the "world's first neural synthesizer".

"It is a completely autonomous instrument that consists of a neural network that is bio-engineered from my own cells that control a custom-built synthesizer," he says. "There is no programming or computers involved, only biological matter and analogue circuits."

Ben-Ary's "rock star in a petri dish" will perform three concerts in Sydney at the National Art School as part of The Patient exhibition of art and medicine at UNSW Art and Design.

cellF - Video Documentation



CellF will jam live with musicians including Chris Abrahams from the Necks, Claire Edwardes and Jason Noble from Ensemble Offspring and double bassist Clayton Thomas.

Thomas says he is intrigued to see how Ben-Ary's "external brain" responds to his music and produces its own sounds.

"Is it going to be a hyper-alert being that can make a synthesised orchestral range of responses?" he asks. "How does it think in terms of musical gestures?"

But he does not believe robotic musicians will put him out of work, pointing out that it is not equipped with the emotional and social responses of a live human being.

But he jokes: "I want to understand the enemy."

Ben-Ary's plan is for *cellF* to play with various musicians to determine if different musical styles might influence its ability to play. He says *cellF* will turn the activity of the neurons into sound that is sent to 16 speakers: "Walking around the performance space offers the sensation of walking through my external brain in real time."

CellF is not a one-off project. Ben-Ary says he practices "biological alchemy" to transform his skin cells and stem cells "as I require,

which is quite incredible being a bio-artist that works with cells for his artwork".

He says there are 20 microscopic "external brains" growing in a lab at the University of NSW in preparation for the concerts.

"The idea of having my own bodily material growing in incubators around the world detached from me and my body is quite a profound feeling," he says.

He admits he felt a sense unease working with "bits of brains".

"When working with neurons, ethical questions are raised in regard to consciousness, intelligence and sentience," he says. "Questioning neurons' ability to feel pain is valid, whilst also understanding that the neural networks I create, currently only exist in a symbolic realm."

cellF performs at the Cell Block Theatre, National Art School from June 10 to 12.

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