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 The breakthrough will allow scientists to test drugs outside the patient. Picture: file.

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Melbourne researchers successfully grow blood cells in the laboratory

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MELBOURNE researchers have successfully grown human blood cells from stem cells, overcoming a major hurdle on the way to the holy grail of creating ready-to-order stem cells in the laboratory as an alternative to bone marrow transplants for critically ill cancer patients.

This breakthrough stem cell technology will first allow Murdoch Childrens Research Institute scientists to create cell lines they can test potential new drugs and new combinations of existing treatments outside the patient.

MCRI cell biology researchers, led by Professor Andrew Elefanty, Dr Elizabeth Ng and Professor Ed Stanley, have created a type of blood cell that mimics the “ancestor” of blood cells found inside the embryo.

Prof Elefanty said the process to grow them took about three weeks, similar to the time taken during embryonic development.

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“Lots of people are making blood cells, but no-one could make the right type of blood - they didn’t work properly,” Prof Elefanty said.

“For us the significant thing was discovering the difference between the genes expressed in the blood made in the laboratory, and the stem cells in umbilical cord blood.

“Realising that some of these genes were different, gave us an idea of what sort of things we needed to change in the culture to get the cells growing in the right direction.”

Their technique was today published in the prestigious journal Nature Biotechnology.

He said while the ultimate aim was to create blood cells that could be transplanted into leukaemia patients who didn’t have a bone-marrow transplant match, this technique could potentially be used to make other types of cells such as platelets, red blood cells and immune cells.

The next stage of the research, funded by Children’s Cancer Foundation, will use this stem cell technique to insert the cancer-causing genes into blood cells and test the effectiveness of treatments.

Foundation chief Aileen Boyd-Squires said the aim of this research to find more targeted and effective treatments that had fewer side effects.

“Sometimes the treatments are the killers,” Ms Boyd-Squires said. “About 10 per cent of children who have gone through radiotherapy or chemotherapy will end up with an adult cancer.

“Childhood cancer has debilitating effects that go beyond just the child, so we want to get in early.”

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