

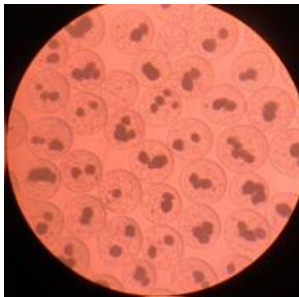
# Australian Foundation For Diabetes Research

[www.afdr.org.au](http://www.afdr.org.au)

NEWSLETTER  
MAY 2023

## Reversal of Diabetes Using Human Stem Cell Derived Insulin-Producing Cells

The Australian Foundation for Diabetes Research (AFDR) is pleased to announce that normalisation of blood sugar levels has been achieved in a pre-clinical diabetic model using stem cell derived insulin-producing cells. These cells, supplied by colleagues at the Israeli company Kadimastem Ltd, were placed in protective microcapsules prior to their implantation in diabetic mice. Glucose levels returned to normal during the first week after transplantation and remained so for the 3-month duration of the experiment.



*A microscopic view of encapsulated clusters of human insulin-producing cells.*

These data were presented in April at the American *Stem Cell Derived Beta Cells Summit* by Director Professor Bernard Tuch.



### STEM CELL DERIVED BETA CELLS

4<sup>th</sup> IPITA/HSCI/JDRF SUMMIT | APRIL 24-25, 2023 | CAMBRIDGE, MA, USA | [WWW.BETACELLS.ORG](http://WWW.BETACELLS.ORG)

“We are excited by these findings,” said Professor Tuch, “as they give credence to the goal of carrying out a clinical trial with such cells.”

The AFDR is now trying to achieve a similar result with these encapsulated cells placed in a bioengineered scaffold that can be readily implanted into the diabetic recipient. The person responsible for producing these scaffolds is Professor Tim Dargaville from the Queensland University of Technology.

## Associate Professor Samantha Hocking appointed as Director

At the AGM in December last year, Associate Professor Samantha Hocking was appointed as a non-executive Director to the Board of the AFDR. She is a clinical academic at the University of Sydney and an endocrinologist at Royal Prince Alfred Hospital. Professor Hocking has an enquiring mind and likes to explore the how and why in addition to treating patients.



“We welcome Professor Sam Hocking to the Board”, said Professor Bernie Tuch, “as a next generation person with a very strong interest in diabetes. “Her appointment provides a pathway to the future for the AFDR.”

## Publication in Journal

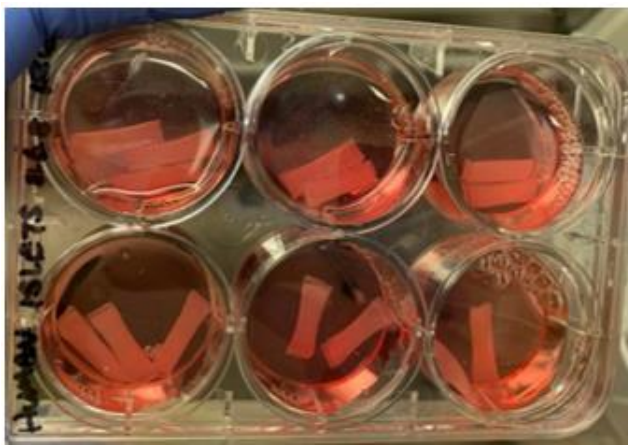
The scaffold which the AFDR is using to deliver encapsulated insulin-producing cells into diabetic recipients is featured in a recent review that appeared in the *Journal of Cellular & Molecular Medicine*. The title was *Cell Delivery Systems: Towards the next generation of cell therapies for type 1 diabetes*.



First author was Dr Felix Deng, the Research Officer carrying out the Bioengineered Diabetes Therapy Project (Diabetes Project) for the AFDR at The University of Technology Sydney (UTS).

## Preclinical Studies Continuing at University of Technology Sydney

The AFDR has recently renewed its arrangement with UTS to allow pre-clinical studies to be continued within the laboratories of the Faculty of Sciences of the University for a further 2 years. Here, insulin-producing cells are placed in microcapsules which are then seeded into 3D scaffolds before being implanted into diabetic recipients.



*Tubular scaffolds containing encapsulated insulin-producing cells maintained in culture medium prior to implantation in diabetic recipients.*

The people at UTS carrying out the Diabetes Project are Professor Hui Chen and Ms Ridhima Wadhwa, who has replaced Iris Cheng.



*One of the frequent zoom conferences held to discuss progress of the Diabetes Project. Pictured (upper left to right) are Ms Iris Cheng, Professor Bernie Tuch, Professor Hui Chen, and Ms Ridhima Wadhwa.*

Ms Wadhwa immigrated from New Delhi in India and has recently submitted a PhD she undertook at UTS and the University of Sydney. She has small animal expertise as well experience in tissue culture and handling nanoparticles.

## National Stem Cell Foundation of Australia Continues Support

The AFDR continues to receive support from the National Stem Cell Foundation of Australia (NSCFA) for its Diabetes Project, as it progresses towards the clinic with a potential therapy for type 1 diabetes.



Director Professor Bernie Tuch attended an annual dinner held in Melbourne by the NSCFA for recipients of its funds. Additionally, Professor Tuch addressed the Board of the NSCFA in December last year, updating it on progress being made, and answering questions from its Directors.

In April this year, the AFDR submitted to the NSCFA its 4<sup>th</sup> Progress Report regarding the Donor Supported Research Funding Agreement between the two entities.

## Nanotechnology

Three years ago, the AFDR started using nanoparticles to enhance the use of its bioengineered device in the Diabetes Project. These experiments were carried out at UTS with support from the Juvenile Diabetes Research Foundation based in New York. The outcome of the initial study was recently published in the peer reviewed journal *Nanomedicine*.



The AFDR is now expanding the use of these tiny particles and involving the University of Queensland (UQ) to do so. A key person in that institution is Dr Yinghong Zhou, a Senior Research Fellow from the Dental School in that institution. Also involved, from UTS, is Dr Jiao Jiao Li, a Senior Lecturer at the School of Biomedical Engineering.



*(l to r) Dr Yinghong Zhou from UQ and Dr Jiao Jiao Li from UTS involved in the use of nanoparticles to enhance use of bioengineered device.*



**MAKING A DONATION**

There are three ways you can make a donation to support the *Bioengineered Diabetes Therapy Project*, being conducted by the AFDR:

1: Via Credit Card

2: Via cheque/money order payable to the Australian Foundation for Diabetes Research PO Box 821, Maroubra NSW 2031

OR

\*National Stem Cell Foundation of Australia (NSCFA) PO Box 140, McCrae VIC 3938

3. Via Bank Transfer to the Australian Foundation for Diabetes Research: BSB 062 230, Account Number 1027 3887

OR

\*National Stem Cell Foundation of Australia BSB 083 266, Account Number 12305 0040

\* The NSCFA has an arrangement with the AFDR to match \$ for \$ for donations ≥ \$500. Thus, if you donate \$1000 to the NSCFA for the Diabetes Project, the NSCFA will give the AFDR \$2000. Both the AFDR and NSCFA are endorsed as *Deductible Gift Recipients*.

If donating through the NSCFA, please advise the AFDR (afdr@optusnet.co.au)

**Via Credit card:**

**Amount:**

- \$50  \$100  \$200
- \$500  \$1000
- \$2500 = shipment of cells from Israel
- Other \$.....

- Visa  Mastercard

Name on card  
 .....  
 Card number \_\_\_\_ / \_\_\_\_ / \_\_\_\_ / \_\_\_\_  
 Expiry ...../..... Validation number \_\_\_\_

**MAKING A BEQUEST**

I give to the Australian Foundation for Diabetes Research:

- the sum of \_\_\_\_\_,
- the following assets in my estate: \_\_\_\_\_, or
- \_\_\_ percent of my estate, free from all duties thereon.

\* When drafting your will, please select only the relevant alternative.

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