

# BIOTECHNOLOGY AND CONTEMPORARY ART

*Svenja J. Kratz*



Queensland University of Technology



# Svenja J. Kratz

## Bio

Svenja Kratz is a contemporary Brisbane based artist interested in interdisciplinary practice with a focus on the intersections and creative possibilities of art and science. Since 2007, she has been working in the area of cell and tissue culture at the Queensland University of Technology's (QUT) Institute of Health and Biomedical Innovation (IHBI). During this time she has produced an evolving series of exhibitions collectively titled *The Absence of Alice*. The title refers to her early experiences culturing a cell line derived in 1973 from the bone cancer lesion of an 11-year old girl, called Alice. All subsequent exhibitions map the creative evolution and movement of this initial engagement into other areas of applied biology, including genetic engineering and primary culture of human and fetal calf cells.

She is currently completing a PhD in bio-media art in a creative partnership between the Creative Industries Faculty and IHBI at QUT.



# The Immortalisation of Kira and Rama:



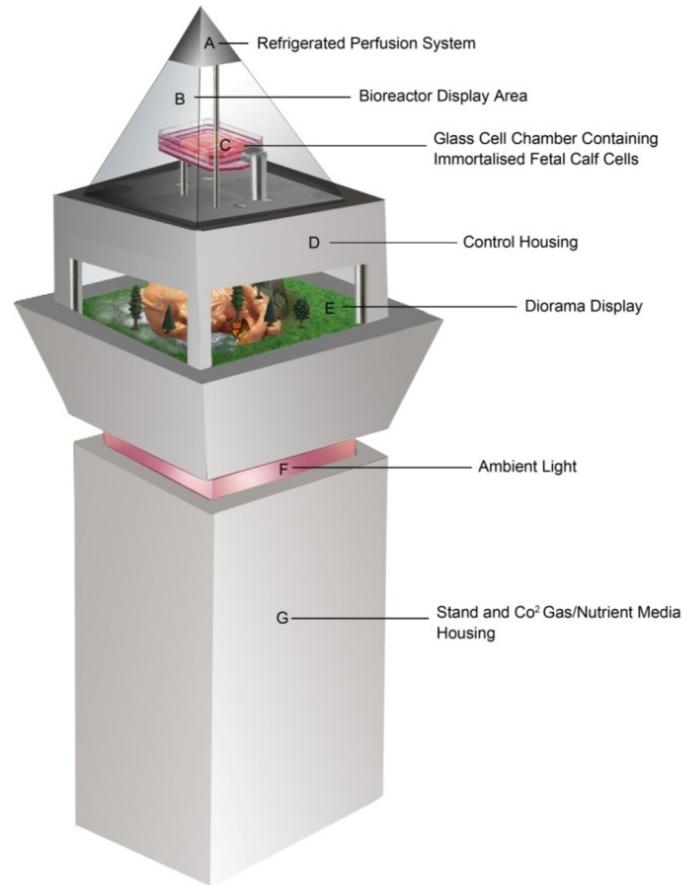
2011



# The Immortalisation of Kira and Rama

*The Immortalisation of Kira and Rama* is part the latest instance within *The Absence of Alice* series. The project stems from my experiences culturing fetal calf cells during a three month residency at SymbioticA, the Centre of Excellence in Biological Arts at the University of Western Australia in Perth in 2010.

The residency project originally involved an investigation into the role of bacteria and viruses in evolution. As part of this engagement, I planned to isolate and immortalise fetal calf cells using plasmids (bacterial DNA molecule incorporating viral vectors) : a process that enables the cells to replicate indefinitely, unlike most healthy cells which can only divide an average of 50 times. The immortalised cells would then be displayed in a built Egyptian-inspired bioreactor along with the mummified body of the calf.



Bioreactor designs



The project was inspired by the way in which contemporary biotechnologies have impacted on our understandings of life and death, as laboratory cultured cells can long outlive the organism from which they came. However the work was also linked to previous works developed for *The Absence of Alice* which comment on the use of fetal bovine serum (FBS) in cell and tissue culture. FBS is a protein rich serum derived from the blood of fetal calves. While the use of FBS has been criticised, the fetal calves are a by-product of meat production and apart from the blood which is harvested for use in cell culture, they are discarded.

This work does not aim to criticise the meat industry or the use of FBS, but rather draws attention to the fact that there are victims at every level of consumption, and that all growth or advancement has both positive and negative implications.



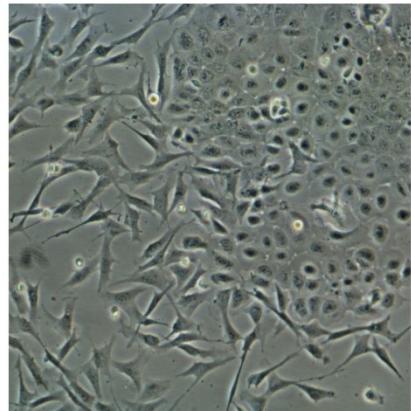
**A Shrine for Algernon:**

**Instance #2, 2009**

*Wood, MDF, Polyurethane,  
Polymer Clay, Pigment, Oil Paint,  
Faux Grass, Animal Bones, Resin,  
Rocks, Miniature Trees*  
Installation View and detail ,  
QUT Gallery , Kelvin Grove



*During the SymbioticA residency, I obtained two fetal calves, Kira (girl) and Rama (boy), from an abattoir. Even though they had been dead for a day when I collected them, I was still able to successfully isolate and culture their skin cells in the laboratory. I removed their organs and packed their bodies in a salt compound in an effort to mummify them. While the calves' cells were successfully preserved in a -80° freezer waiting for revival and immortalisation, the mummified calves had to be destroyed, as the crates they were packed into cracked under the weight of the salt and started to ooze blood and body fluid. As such, the calves had to be discarded. My SymbioticA colleagues helped me salvage their hearts, their hide, as well as some of the original salt compound. These relics were included within the exhibition as part of Kira and Rama's story.*



Cell Isolation Process – SymbioticA 2010

# The Immortalisation of Kira and Rama

The finished bioreactor showcasing the revived cells of Kira was presented in August 2011 as part of the large scale solo exhibition *The Absence of Alice and the Bone Gardens* at The Block Gallery at QUT's Creative Industries Precinct.

Cells from the female calf Kira were seeded into a beaded silkworm cocoon scaffold – symbolising the transformation of Kira from calf to individual cells. Cryovials, which contained Kira's cells, and the original tissue culture flask, in which her cells were isolated, were displayed in the bioreactor chamber. A found poem relating to the prospect of immortality through cryopreservation was inscribed on the glass vessel containing the vials.

A Raven was included in the display as they are often described in mythologies as birds of transition that guide the souls of the dead between this world and the next, a mediator between the opposition of life and death. In this instance, the raven watches over Kira cells, guiding her spirit back from death.

The exhibition also included a display cabinet of relics collected from the calves during the isolation process including histology slides and wax mounts, tanned hide, brain specimens, skin and teeth. These relics aimed to create a visceral link with the cells and calves and linked to a video work incorporated as part of the bioreactor cabinet.

The final component of the work consisted of two miniature landscape dioramas representative of Kira and Rama. These dioramas were composed of the tanned and salted hide of Kira and Rama and included miniature chairs and wings. The creation of strange miniature landscapes commented on the way in which cell and tissue culture makes the everyday and familiar strange. Kira's diorama included a lush green landscape with blooming roses, referencing her revival and rebirth as individual cells. Rama's diorama on the other hand, included an 'icy' salted landscape, as his cells remain frozen awaiting their eventual revival.

The diorama's also included birds as a symbol of creative flight and butterfly wings with painted skulls symbolic of Kira and Rama's transformation through death.



**The Absence of Alice and the bone  
gardens, 2011**

Installation view, The Block, QUT  
Creative Industries Precinct

Photo: Dan Cole



**Towards the Immortalisation of Kira and Rama, 2011**

Installation view, The Block, CI Precinct,  
Kelvin Grove



**Towards the Immortalisation of Kira  
and Rama:  
The Temporary Resurrection and  
Second Death of Kira, 2011**  
Installation view, The Block, CI Precinct,  
Kelvin Grove



**Towards the  
Immortalisation of Kira  
and Rama:  
The Temporary  
Resurrection and Second  
Death of Kira, 2011**

*Custom bioreactor, beaded  
silkworm cocoon seeded with  
primary fetal calf cells from Kira,  
original flask in which the cells  
were cultured and other relics from  
the development process (scaffold  
trials, cryovials), video*

Installation detail, The  
Block, CI Precinct, Kelvin  
Grove

Photo: Dan Cole



**Towards the  
Immortalisation of Kira and  
Rama:  
The Temporary  
Resurrection and Second  
Death of Kira, 2011**

*Custom bioreactor, beaded  
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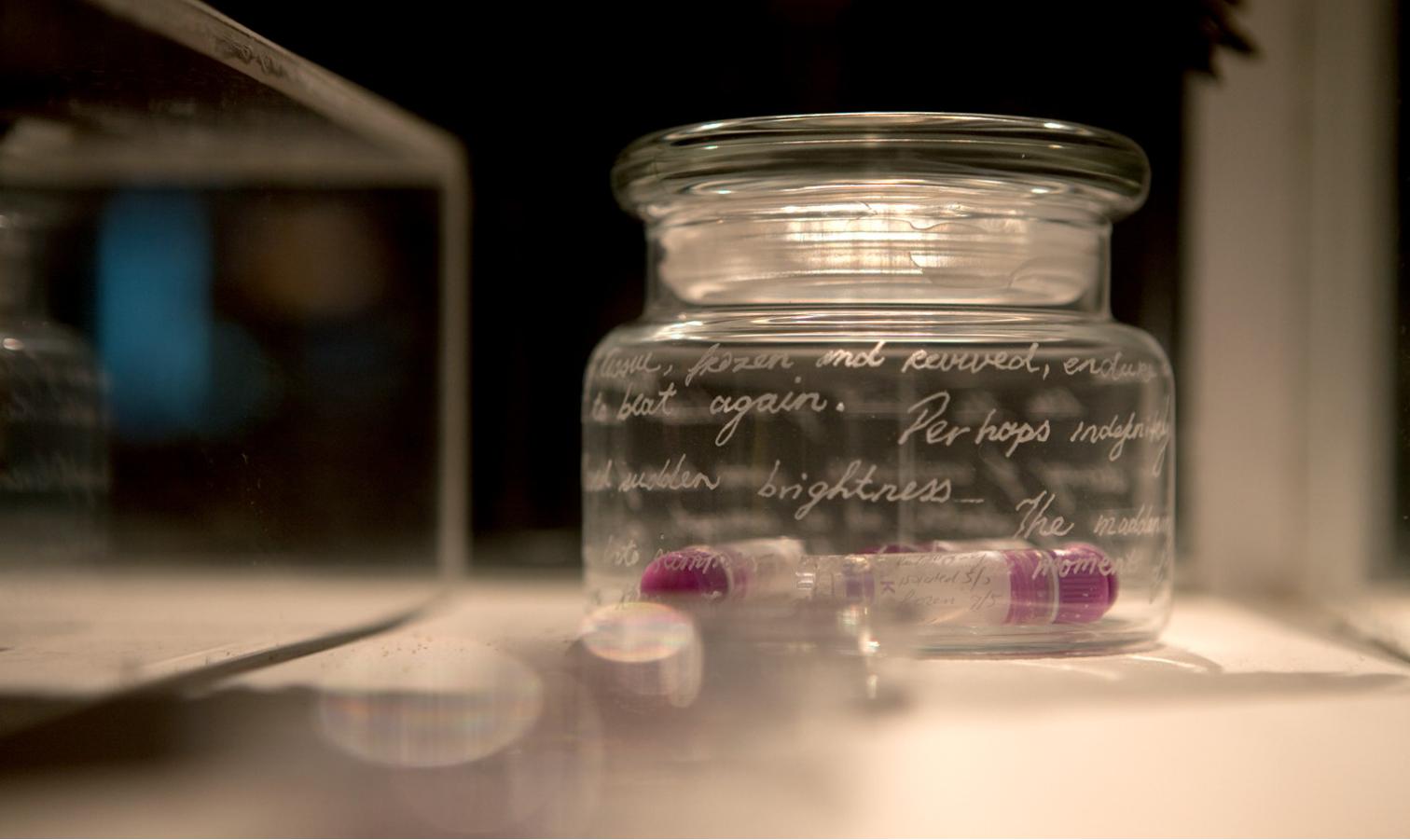
Installation detail, The Block,  
CI Precinct, Kelvin Grove

Photo: Dan Cole



**Towards the Immortalisation of Kira and Rama:  
The Temporary Resurrection and Second  
Death of Kira, 2011**

*Custom bioreactor, beaded silkworm cocoon seeded with primary fetal calf cells from Kira, original flask in which the cells were cultured and other relics from the development process (scaffold trials, cryovials), video Installation detail, The Block, CI Precinct, Kelvin Grove*



Detail of glass vessel containing cryovials containing Kira's cells engraved with a found poem from the *Preface and Foreword of The Prospect of Immortality* by Robert C.W. Ettinger

*"Resurrections of tissue, frozen and revived, endure and reproduce like the heart of a chicken was able to beat again. Perhaps indefinitely..."*

*The stirring of conscience opens lines of thought and sudden brightness.  
The maddening absurdity  
of death as a concept.*

*Open a door into summer and be a moment of sleep without dreams.  
The freezer is more attractive than the grave."*

Towards the Immortalisation of Kira and Rama:  
The Temporary Resurrection and Second Death of Kira, 2011

*Custom bioreactor, beaded silkworm cocoon seeded with primary fetal calf cells from Kira, original flask in which the cells were cultured and other relics from the development process (scaffold trials, cryovials), video*

Installation detail, The Block, CI Precinct, Kelvin Grove

Photo: Dan Cole



**Towards the Immortalisation of Kira and Rama: Relics, 2011**

*Display cabinet, relics from Kira and Rama including brain sections, tanned and salted hide, histology slides and wax blocks, bone fragments and hearts*

Installation detail, The Block, CI Precinct, Kelvin Grove



**Towards the Immortalisation of Kira and Rama: Relics, 2011**

*Display cabinet, relics from Kira and Rama including brain sections, tanned and salted hide, histology slides and wax blocks, bone fragments and hearts*

Installation view, The Block, CI Precinct, Kelvin Grove



**The Absence of Alice and the bone  
gardens, 2011**

Installation view, The Block, QUT  
Creative Industries Precinct



# Acknowledgements

The development of all projects within *The Absence of Alice series* would not be possible without the continual support of IHBI and the input and generous assistance of team members from The Tissue Repair and Regeneration (TRR) Group.

Thank you: Zee Upton, Rebecca Dawson, Tony Parker, Jacqui McGovern, Derek Van Lonkhuyzen and Tara Fernandez

Thanks are also extended to Dan Mafe, Mike Riddle and Michelle Oxenham and input and assistance with the production of creative works.

*The Immortalisation of Kira and Rama* was researched and developed during a residency at SymbioticA, the Centre of Excellence in Biological Arts in the School of Anatomy & Human Biology at The University of Western Australia.

The bioreactor for *The Immortalisation of Kira and Rama* was developed as part of an ongoing research project of the SymbioticA Research Group (SARG)- The Toolkit. The first prototype was developed in collaboration between SARG, Svenja Kratz and mechanical engineers Dusty Tame and John Barnard. The current bioreactor is a collaboration between Svenja Kratz and IHBI researchers Leo Leung and Dr Tristan Kroll.

*Thank you Kira and Rama. You will be remembered always and live on in memory and the physical manifestations of your presence and absence.*