semi permeable (+)
I am delighted to feature as part of ISEA2013, the world premiere of *semi*permeable*+, a major exhibition of work to come out of SymbioticA. All of the works have been made through the artists' research affiliation with SymbioticA, the Centre of Excellence in Biological Arts at the University of Western Australia.

For many years SymbioticA have been supporting the development and presentation of new work in the biological arts, much of which has been exhibited internationally in prestigious exhibiting spaces and festivals. Until now Australian audiences have had few opportunities to view this ground-breaking work and I am pleased that ISEA2013 has provided the perfect context to present a representative overview of the work from an organisation that has led the field of biological arts.

I would like to congratulate all of the participating artists and in particular those involved in creating new works especially for this premiere: Oron Catts, Benjamin Forster, Sam Fox, Nigel Helyer, Cat Hope and Ionat Zurr.

I would also like to thank the SymbioticA and Powerhouse Museum staff in making this exhibition possible and such a success.

Jonathan Parsons
Director, ISEA2013
When we think about engaging with the life sciences for artistic research some of us might become uncomfortable or wonder how or why artists would even be using a laboratory as their studio. For some this conundrum leads us to a more pragmatic assumption, which is that artists in laboratories are making art out of science or maybe even trying to communicate science. Yet, for more than a decade, a very different approach has been taken in the way SymbioticA presents opportunities for artists who wish to delve into life.

The artworks in *semipermeable* (+) demonstrate the unending possibilities that artists working at the convergence with life sciences bring to their practice. We are presented with curious glimpses into developments in science and technology (new and old) and are also prompted to consider possible consequences of particular trajectories.

Part of the University of Western Australia’s Cultural Precinct, SymbioticA is an integral component of UWA’s creative profile, attracting attention worldwide whilst still employing an inclusive grass-roots approach to their artistic research. Their busy programme including residencies, academic courses, public seminars and symposia has positioned the UWA as the primary international institution for research into the biological arts.

I am pleased that this new major exhibition *semipermeable* (+) is on show in Australia for the ISEA2013 symposium on future-focused ideas in art. I congratulate the staff at, and artists associated with, SymbioticA who have invested a great deal of time and resources in bringing this work into the public arena and I encourage you all to engage and ruminate on the work in this show.

Winthrop Professor Ted Snell AM CitWA

Director, Cultural Precinct, University of Western Australia
SymbioticA is an artistic laboratory dedicated to research, learning and critique of the life sciences. It is the first research laboratory of its kind, in that it enables artists to engage in wet biology practices in a biological science department. With an emphasis on experiential practice, SymbioticA facilitates research and actions which constitute cultural scrutiny regarding shifting perceptions of life, through better understanding and articulation of artistic ideas around scientific knowledge and informed critique of the ethical and cultural issues of life manipulation.

The focus on experiential engagement with life led SymbioticA to develop programs that would allow artists, designers and other humanities and social science researchers access to labs and techniques usually reserved only to scientists and engineers. These programs include residencies, workshops, academic courses and public engagement through exhibitions and forums.

By disseminating the know-how of the life sciences and biotechnologies to artists, philosophers, ethicists and other interested people SymbioticA assists in creating a platform that actively engages in proposing different directions in which knowledge can be applied and technology can be employed. Much of the work coming out of SymbioticA seems to be transgressive, trespassing into areas where “art should not go”.

As SymbioticA’s research is not scientific and is conceived, developed and executed as a cultural and artistic action it situates itself and infringes upon some very established demarcations. By using the tools of science, researchers in SymbioticA are questioning the professions’ specific domination of processes and ritualistic actions. Things become even more contentious when both the subject and object of artistic manipulation is life itself, manifested through interventions with life processes from the molecular level through the whole organism to ecological systems.

Being based within a research university, SymbioticA needs to adhere to regulations concerning ethical conduct and health and safety. In most cases our research is scrutinised much more strictly than our scientific colleagues’ work. A common criticism of the work undertaken by artists in residence is that this type of artistic involvement with life is frivolous and in some cases “revolting”. The apparent lack of utilitarian value seems to trigger such reactions but at the same time it allows critical engagement that destabilises perceived assumptions in regard to the level of manipulation of life. Through engaging with the life sciences – the projects researched within SymbioticA access tools and knowledge normally privileged to science and industry.

The application of knowledge, acquired through directed research in life sciences, seems to be driven by engineering logic and ambition to control life and its processes. Having control over life, its processes and the environment as whole may have always been the basis for human endeavour. What is changing are the attitudes towards life resulting from the accumulation of scientific knowledge and technological capabilities, mounting up with increasing speed and scale of manipulation. A choreographed interplay between hype and actuality is overlaid on a public that is bombarded with information that should excite and disturb but is also easily forgotten. As the perception of the level of control over the matter of life increases, it seems that whereas previously biologists were employing their understanding of engineering to the life sciences, now it is the engineers who force-fit engineering methodologies into living systems; life is becoming bio-matter, waiting to be engineered.
The concept of the single engineering paradigm indicates a future in which the control of matter and life would be achieved by applying engineering principals; through nanotechnology, synthetic biology and, as some suggest, cognitive and neuro-engineering. Ironically, this might seem an admission from the life sciences that the idea of the unifying theory of biology cannot be achieved and therefore a utilitarian application based approach might be the next best thing.

One important aspect of applying this new engineering mindset to the manipulation of life is the notion that it would make bio-matter easier to engineer; and by that provide the ability of manipulating and creating new life by the uninitiated. As a result, life is becoming raw material for artists, designers, hobbyists, and amateurs. Artists and designers are already engaging with bio-matter in ways that only a few years ago would have been hard to imagine.

The aesthetically driven and confronting treatment of life by artists creates an uneasy feeling about the level of human manipulation of fellow living beings. This uneasiness seems to stem from a cultural and ethical ambiguity in regard to human engagement with life’s processes. Our values and belief systems seem to be ill-prepared to deal with the consequences of applied knowledge in the life sciences. Through rigorous, critical and indeed wondrous explorations in the life science laboratory – the artists begin a dialogue that engages with the extraordinary potentials and pitfalls of life itself.

**Oron Catts, SymbioticA Director**

www.symbiotica.uwa.edu.au

SymbioticA was founded in 2000.

SymbioticA, The Centre of Excellence in Biological Arts is supported by The University of Western Australia.
TRANSGRESSING THE SELECTIVE MEMBRANE

“There is a tendency for living things to join up, establish linkage, live inside each other, return to earlier arrangements, get along, whenever possible. This is the way of the world.

The new phenomenon of cell fusion, a laboratory trick on which much of today’s science of molecular genetics relies for its data, is the simplest and most spectacular symbol of the tendency. In a way, it is the most unbiologic of all phenomena, violating the most fundamental myths of the last century, for it denies the importance of specificity, integrity, and separateness in living things. Any cell - man, animal, fish, fowl, or insect - given the chance and under the right conditions, brought into contact with any other cell, however foreign, will fuse with it. Cytoplasm will flow easily from one to the other, the nuclei will combine, and it will become, for a time anyway, a single cell with two complete, alien genomes, ready to dance, ready to multiply. It is a Chimera, a Griffon, a Sphinx, a Ganesha, a Peruvian God, a Ch'i-lin, an omen of good fortune, a wish for the world.”

(Lewis Thomas; The Lives of a Cell: Notes of a Biology Watcher, 1974, Viking Press)
**semi** permeable (+) looks at the membrane as a site, metaphor and platform for a series of artistic interventions and projects, some commissioned specifically for the show and other selected from the many projects developed at SymbioticA since 2000.

From ancient life forms to future lives yet to appear, the membrane has acted as the definition of Self; maintaining integrity, protection and acting as the interface to the world. The membrane is active, selective and fragile. However, the selective membrane can also be a human construct, as humans have evolved a high dependency on edge detection. The strongest visual (and auditory) cues deal with where one thing ends and another begins. This is also how humans tend to arrange – from perception of individual self to societies and nations. SymbioticA brings together 14 artists from different disciplines to present, culturally articulate and re-visit, metaphorically and actually, the notion of the membrane. The artists investigate protocells, infection and DNA through to skins and garments to borders and state control.

I am writing these lines 33,000 feet in the air, on a hasty round the world trip that will see my body (and luggage) crossing eight borders in ten days. But now I’m traversing through what can be considered the largest semipermeable membrane that can be experienced by a human. The atmosphere acts as a barrier between space and this “piece of rock” we call earth. As a protective barrier the atmosphere is becoming a contested site, from holes in the ozone layer that let radiation through to greenhouse gases that keep heat in. Looking down through the clouds, this bird’s eye view allows zooming in, into the general concept of the membrane from the molecular to the atmospheric and everything in between. Every level seems to have its own kind of contestable barrier; every membrane needs to be questioned.

This was the artistic research question we posed when we invited some of the most interesting Western Australian artists to join us in a journey of re-articulating the membrane; Cat Hope, Sam Fox and Nigel Helyer joined Ionat Zurr and myself in trying to find ways to culturally engage with the different notions of the semipermeable membrane. It was done from within a place that we always considered as a porous tissue between culture and the life sciences - SymbioticA. By adding the “constraint” of the semipermeable we hoped that we could somewhat tighten the leaky porosity of SymbioticA while allowing diverse artistic practices to manifest their approach to the question we posed - what does the semipermeable membrane mean on different scales?

When the opportunity to present the outcomes of these explorations as an exhibition came about we decided to add few more works that have been developed at SymbioticA which seem to address this question. Recent projects of Benjamin Forster, Guy Ben-Ary, Kirsten Hudson, the work of Svenja Kratz, Tagny Duff, and the well-travelled pieces of Verena Friedrich, Donna Franklin and The Tissue Culture & Art Project.

In its core this is a biopolitical show, all works seem to try and transgress and breach the idea of the permeability of membrane - experimenting with what is allowed in and what needs to be kept outside, and in so doing the works in the exhibition are opening many more questions about sovereignty and integrity, biopower and control, animation and temporality, entropy and decay.

From the protocells of The Mechanism of Life- after Stephane Leduc that stands for the most basic and transient example of the notion of the membrane to Nigel Helyer’s Supereste ut Pugnatis (Pugnatis) ut Supereste, which engulf the question of the border from the materiality of the Bacteriophage to the immateriality of immigration dictation tests, the journey of the Semipermeable takes us through different scales of organisation, size and time:

We see the reanimation of DNA in Andre Brodyk’s work proto-animate that reawakens latent strings of molecular “instruction” by relocating it into another physical context. Followed by Tagny Duff’s Living Viral Tattoos, and Svenja Kratz’s HEK 293T: The Transformation of Johni or Oliver, which are very different works that share the transformative power of the vector- the infection. The ability of changing the nature of the being, in this case on a cellular and tissue...
By inserting something new, a foreign agent that disrupts or enhances (depending on your point of view) the being in question. Benjamin Forster's *Kynic*, does a similar thing on a somewhat larger scale by fusing two discrete entities – human and dog cells, into a new being. Here there is no vector but rather a new partnership of sorts.

From rupturing the cell membranes of the works above, we then move to the idea of the transformation of the skin, as organismic barrier. With Ben Ary and Huduson's *In Potentia*, acting as an intermediate, where the (fore)skin is transformed into a “brain” using a cell reprogramming technique called induced pluri-potent stem cells. The resulting cells live within a new type of body complete with its own non permeable double contained protection. In Verena Friedrich’s *CELLULAR PERFORMANCE* skin cells are forced to perform pseudo-scientific text adopted from the skin care industry, to only then slowly break free from the form and perform their own agency.

Cat Hope's *Sound of Decay* exposes us to the sounds and sights of the body breakdown once the semipermeable membrane is not active any longer. The integrity of the body is compromised and the body irreversibly succumbs to decay and entropy, becoming matter.

In contrast two earlier works from 2004; Donna Franklin's *FibreReactive*, and The Tissue Culture and Art Project’s *Victimless Leather*, force us to rethink the idea of the garment as a protective barrier by literally growing living garments. By being the Other, these works do not necessary protect or separate bodies but rather engage with questions of aliveness. Finally, Sam Fox’s three *TechnoCulturalBodySuits* explore the ethics and the violence of different human bodies moving through and transgressing borders and membranes.

It is obvious that these short lines cannot do justice to the complexity and multifaceted narratives that each of the works above embodies, but I hope that travelling through the exhibition and reading the artists own words will cohere and/or seduce the audience to rediscover the problems associated with taking semipermeability for granted.

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Furthermore, I am acutely aware that issues of borders and controls are still precarious threatening the physical embodied presence of some of the works in the show. The nature of such an exhibition necessitates some intricate manoeuvring through all kinds of gatekeepers. Reminding me again that the difference between the permeable and semipermeable is the energy that is needed to maintain and pierce the membrane. This stands in complete contrast with Lewis Thomas’ quote I choose to start this text. For him breaking the membrane is “an omen of good fortune, a wish for the world”. I do hope so.

**Oron Catts**
Round the World
May 2013
LIST OF ARTWORKS & ARTISTS

Guy Ben-Ary, Kirsten Hudson and Mark Lawson
Collaborating Scientist: Stuart Hodgetts.
In Potentia, 2012

Andre Brodyk

Oron Catts, Ionat Zurr, Corrie van Sice
The Mechanism of Life- after Stephane Leduc, 2013

Tagny Duff
Living Viral Tattoos, 2008

Benjamin Forster
Kynic, 2013

Sam Fox

Donna Franklin
FibreReactive, 2004

Verena Friedrich
CELLULAR PERFORMANCE, 2011-12

Nigel Helyer
Supereste ut Pugnatis (Pugnatis) ut Supereste, 2013

Cat Hope
Sound of Decay, 2013

Svenja Kratz
HEK 293T: The Transformation of Johni or Oliver, 2010

Tissue Culture and Art Project
Victimless Leather, 2004

Curator: Oron Catts
Interested in how art has the potential to problematise the shifting cultural, ethical and political forces that govern and determine life, death and personhood, Guy Ben-Ary and Kirsten Hudson have developed In Potentia: a liminal, boundary creature of animate and inanimate matter.

Informed by the aesthetics of steam punk, retro-futurism and eighteenth century scientific paraphernalia, In Potentia is a speculative techno-scientific experiment with disembodied human material, diagnostic bio-medicine equipment and a cell reprogramming technique called induced pluri-potent stem cells or iPS.

Developed in 2007, iPS represents a significant shift in developmental biology as it means that we can now take adult cells from any part of the body and reverse engineer them with a retrovirus capable of coaxing the cells back into an embryonic stem cell-like state. These stem cells can then be "tricked" into becoming kidney, heart muscle or brain cells or any other cell-type. At a cellular level, the potential of IPS cell technology not only appears to make the ethical dilemmas associated with human embryonic stem cell research old news, but also makes it possible to define and manipulate smaller and smaller unites of live matter, enabling increasingly subtle distinctions between one kind of “life” and another.

Beginning with human foreskin cells purchased from an on-line catalogue, Ben-Ary and Hudson have been supported by SymbioticA – the Centre of Excellence in Biological Arts at the University of Western Australia, to work with Assoc. Prof. Stuart Hodgetts in the Spinal Cord Repair Laboratory to learn how to reprogram human foreskin cells into stem cells and then differentiate them into neurons. What results is a real functioning neural network or “biological brain” created from human foreskin cells.

Then, in collaboration with Mark Lawson - coordinator of Product and Furniture Design in the School of Design and Art at Curtin University, Western Australia, Ben-Ary and Hudson created a purpose-built sculptural incubator from re-purposed Western Australian wood called Eucalyptus Wandoo, aged brass and hand-crafted glass. Contained within this incubator is a DIY bio-reactor or automated life-support system, which Ben-Ary and Hudson designed and built specifically for the public presentation of living matter, as well as a multi-electrode array that converts the electrical activity of the neural network into an unsettling sound-scape. Custom-built for Ben-Ary and Hudson by "garage" neuro-scientist Tim Marzullo, from Backyard Brains, a company that sells DIY electro-physiological recording kits, the multi-electrode array was then sent to the Steve Potter Laboratory for Neuro-engineering, located in Georgia Tech, Atlanta to be tested for its authentic neural recording validity.

Embodying the unsettling possibilities of the not-yet living and the not-yet dead, In Potentia is an absurd thought experiment that not only symbolises our worst nightmares regarding the destruction of clear-cut categories of life, death and embodied material wholeness; it also forces us to see that rather than being a concrete and discrete category, who or what is called a person is a highly contingent formation that is neither stable nor self-evident. By creating a biological “brain” out of foreskin cells, Ben-Ary and Hudson’s alchemical transformation of living human material ironically challenges the modern western fetishisation of consciousness, where thinking is the measure with which “life” and personhood are judged.

This makes us wonder: As it is now possible to bio-engineer a neural network or biological brain, what potential do we now have to bio-engineer conscious, sentient beings and where exactly would these liminal lives fit within our problematic anthropocentric species hierarchy? What is the potential for artists employing bio-technologies to address, and modify, boundaries surrounding understandings of life, death and personhood? And what exactly does it mean culturally, artistically, ontologically, philosophically, politically and ethically to make a living biological brain from human foreskin cells?
Guy Ben-Ary is an artist and researcher based at SymbioticA. Recognised internationally as a major artist and innovator working across science and media arts, Guy specialises in biotechnological artwork, which aims to enrich our understanding of what it means to be alive.

Dr Kirsten Hudson is an artist, writer and academic employed by the Schools of Design and Art (SODA) and Media Culture and Creative Arts (MCCA) at Curtin University (CU), Western Australia. Her research focuses on the philosophies and histories of the body, informed by gender studies, queer theory and French post-structuralism. Mark Lawson is the course coordinator of 3D Design Product and Furniture/Jewellery at SODA, CU. His research focuses on instigating changing technologies as creative tools that go beyond economics and predetermined outcomes. Associate Professor Stuart Hodgetts is currently Director of the Spinal Cord Repair Laboratory in the School of Anatomy, Physiology & Human Biology, UWA. He has extensive knowledge and expertise in cell based transplantation therapies and has been devoted to this research since 1998. He is currently Symbiotica’s Scientific Consultant and Adviser.

www.in-potentia.com.au

Assisted by the State of Western Australia through the Department of Culture and the Arts.
This entails presenting recombinant DNA as the locus of intra-activity, a biological and creative site, where one thing ends namely latency and another temporarily begins i.e. proto-animation. This is where latent DNA is conceptually and literally repositioned in a pending state of animation within a novel genotype a temporal and therefore semi-permeable condition.

So this concept of the proto-animate is concerned with the transacting of latent information at a molecular level by what has previously been considered to be 'inanimate' material. This material was considered inanimate in so far as it did not code for proteins within the genomic environment.

However, while they are not affective in this sense, the non-coding molecular materials such as introns exist as latent layers, which exist in parallel to the more familiar affective coding DNA. They exhibit recondite properties including unquantifiable regulatory ones. These influence or may partially direct information assembly and direction at some junctures of the molecular development of organisms.

In this alternative view the non-coding material such as the intron matrices as existing in a alternate molecular space is recondite pending state, a proto-animate condition. This is something which therefore can be said to exist in a pending condition of animation and understanding. They may be considered anticipatory temporary, variously, partially, condition or selectively active states of existence for example. Hence I consider this ostensibly non-coding material such as the intron matrices as existing in a latent molecular space in a recondite pending state, a proto-animate condition.

This is an artist's visceral interpretation of a temporal semi-permeable condition, existing as a conceptual and literal substrate. The condition may be apprehended in a type of experimental visual validation of the pending status within living Genetic art expressions.

In *proto-animate* the primary expression vector used to affect such in-between inanimate condition is the transgenic Escherichia coli bacterium. The bacteria are transformed with an invisible novel code sequence, which the artist has engineered into the bacteria using recombinant DNA processes and biocompatible novel molecular coding strategies. Biocompatibility is important because it transacts viability within the host’s living molecular infrastructure.

The novel code sequence is comprised of 158 DNA letters [bases] derived from what is specifically a non–coding region of a gene. Variant 4 of this gene known as the ApoE gene [Apolipoprotein E] is associated with Alzheimer’s disease in humans. This novel genomic matrix was relocated within the corporeal material of E.coli bacteria and is the principal creative agent in the work.

The ApoE gene’s invisible script is a part of the larger hidden matrix of noncoding elements i.e. a conceptual
substrate. One cannot see the script or substrate per se, only the effects of its function and deterioration over time. This transgenic material is used as drawing/painting media to recreate temporal, composite portraits of fictitious person/s conceptually anticipated and visually instantiated via metaphor. So this paint medium i.e. transgenic E.coli is comprised of a particular type of latent DNA associated with the latent condition of late on-set Alzheimer’s.

The metaphor is translated through a hybrid installation, which educes aspects of a 1960's elementary school classroom. This is comprised of varying stages of erasure of text on chalkboard walls, rectified ready-mades and small portrait drawings. When the drawings are experienced over time they reveal a gradual deterioration of imagery. Together these installation components instantiate a pending state of identity and memory loss.

Collectively the images are representative of the recondite, latent effects of late onset Alzheimer’s which is itself a proto-animated condition and which results in a deterioration of identity.

proto-animate^{20TP} is an example of the material expression of the concept of proto-animates, aiming to account for a dynamic sense of becoming as the pending status of proto-animation.

Andre Brodyk is a Bio-artist, researcher and educator with a PhD in Fine art from the University of New South Wales (2009). Currently Dr Brodyk is Post Graduate Fine Art Convenor, School of Creative Arts at The University of Newcastle (UoN).

Brodyk has held numerous artist-in-residency positions within various molecular biology labs since 2001 until the present. This includes The Smurfit Institute of Genetics Trinity College Dublin, The School of Environmental and Life Sciences, (UoN), School of Chemistry and Molecular Biosciences, University of Queensland (UQ), Institute for Molecular Biosciences (UQ), SymbioticA (UWA). The artist has presented his practice-based research outcomes through publications in conferences and invitational exhibitions on Bio-art throughout Australia and in New York, Dublin, New Orleans, San Francisco and Istanbul.

Thanks to: The University of Newcastle, Associate Professor Peter Lewis, Dr Ryan Withers, Dr Ian Grainge, Ms Stephanie Boer.
In his 1911 book *The Mechanism of Life*, Leduc proposed a series of chemical experiments showing the emergence of life-like phenomena of different degrees of complexity. Using seductive imagery of mainly diffusion and osmosis Leduc attempted to prove the mechanistic aspects of life and challenge Vitalism.

With the recent advent of Synthetic Biology where the engineering mindset towards biology is set to dominate approaches to life, we see a rehashing of similar stories from a hundred years ago. One such story is the creation of the basic unit of life, the cell, out of non-living materials. The so-called protocells are becoming a major field of study complete with the hyperbole rhetoric about their potential applications.

This protocol is automated using another hyped technology: three-dimensional printing. There is much discussion about 3D printing technology as the next industrial revolution - something that parallels the assembly line of Fordism at the time Leduc was working on the Mechanism of Life. The promise of 3D printing technology is in its core based on information transfer as the business model; the focus is on the instructions/data as the currency while the materiality is merely an optional manifestation. This is problematic as at the very same time, the 3D printing industry suggests the ability to print actual life, or at least parts of the living. This very seductive scenario of printing life from scratch is played off in this work against the unstable, uncontrollable and transient nature of the protocell droplets as a material. What would capture the public imaginary? The precise movement of the machine? The perfect arrangement of the droplets? Or the off-putting murky outcome of entropy?

To a large extent this piece deals with issues of cultural amnesia and reimagining; pointing attention to the use of certain visuals and expressions to persuade, hype and then disappoint. In a time when the idea of creating synthetic life is in the forefront, it is important to culturally probe current and past approaches to the idea of the Mechanism of Life. The printed "protocells" are unstable and temporary and take on forms that appear organic and then disappear. More than a proof on the mechanism of life, they are a suggestion for a humble approach to the question of what life is and how far are we willing to make life into a raw material for our own ends.

At the very same time that Bergson developed his concept of Élan Vital in his book *Creative Evolution*, others attempted to do away with the metaphysical notion of vital force. One significant endeavour was taken by Stephane Leduc, who set out to prove that life is merely a chemical process.

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Oron Catts is Director of SymbioticA, The Centre of Excellence in Biological Arts School of Anatomy Physiology and Human Biology, The University of Western Australia. Catts is an artist, researcher and a curator at the forefront of the emerging field of biological-arts, whose work addresses shifting perceptions of life. Dr. Ionat Zurr is an artist, researcher and the Academic coordinator at SymbioticA. Catts together with Zurr formed the internationally renowned Tissue Culture and Art Project (TC&A) in 1996. Corrie Van Sice is a creative researcher and engineer, Van Sice develops technologies through partnerships with biologists, artists and designers. Her work applies concepts of bio-mimesis to the production of fabrication methodologies, which identify the inherent potential for matter to become functional, and human curiosity’s creative influence on natural systems. Corrie earned her Masters at New York University’s Interactive Telecommunications Program, the self-proclaimed “center for the recently possible,” and worked as Materials and Processes Engineer at the popular 3d printing company, MakerBot Industries. Corrie has partnered with synthetic biologists at Brooklyn’s citizen science lab Genspace, and began work with Oron Catts and Ionat Zurr via the Finnish Bioart Society at the Kilpisjärvi Biological Station in the fall 2011.

Assisted by Biofilia, Base for Biological Arts, Aalto University, Finland and the State of Western Australia through the Department of Culture and the Arts.
Over time the colour of the bruise disappears from the bleaching caused by fixative chemicals and sunlight. This engagement can be seen as an intervention into the scientific imperative by presenting aesthetic objects that implicitly challenge the reliance on technoscientific visualization techniques used to represent and generate scientific facts.

The Living Viral Tattoos play with the ambiguous nature of the bruise and scientific diagnostic tools. In a scientific context, a bruise signals an interruption and impact on or within the structure of tissue. The effect of force may be perceptible as bluish colour on the surface of the skin, and connote damage or healing to cellular structures. Bruises may also be imperceptible when the molecular makeup of tissue is altered but not demarcated through colour. This project suggests that a generative and violent bruising is created through biotechnical interventions. On one hand bruising may be seen as a healing process and on the other, a sign of harmful damage. In this case the patterns of bruises is created using immunohistochemical staining protocols that visualize the presence of the viral vector in the tissue. Specifically, the presence of antigens from the viral vector is visualized as blue on the skin. This process of visualizing and interpreting cellular movement via colour patterns, while based on rigorous testing procedure, relies on an element of aesthetic speculation. A positive result perceived as “blue” does not always indicate the presence of pathogens or change in cellular structures. For example, the recall of misdiagnosed breast cancer tests using a similar diagnostic lab protocol in Canada attests to the fact that diagnostic tools and methods used to interpret a positive or negative result are not easily determined and may be, at times, erroneous.

Biotechnological imaging processes have become a mode of tattooing cellular bodies and the reading of such markings is not easily perceived and interpreted. In this case, the drawing of a bruise on human skin with viral vectors speaks to the liminal status of tissue, cellular and molecular life. It also speaks to the limitations of biotechnological advances that rely on human visual perception. In the post-biological age, where computer databases and electronic information merge with wet tissue, the encounter with fleshy tissue is often presented to the public through digital imaging or other forms of visual representation. As such, the title “Living Viral Tattoos” is an intentionally provocative one, confronting the assumptions one may have about the status of wet tissue, viruses and living materials. Although the viral vectors and tissue in this sculpture are technically and scientifically non-living, the title suggests otherwise and opens up a space for contemplating a more complex threshold of liveliness that escapes humans visual perception of life.

Thanks to: Dr. Stuart Hodgetts, Ionat Zurr, Oron Catts, Maria Grade Godinho and Dr. Jill Muhling with contributions from Guy Ben Ary and Alicia King, and the support of SymbioticA. The immunohistochemical staining protocol used in this project was developed by Dr. Stuart Hodgetts. Funding support: The Social Sciences and Humanities Research Council and Fonds québécois de la recherche sur la société et la culture.
Tagny Duff is an artist based in Montreal, Quebec. Duff’s interdisciplinary performance and new media works have been exhibited and performed internationally. Duff is the director of Fluxmedia Research-Creation Network and Assistant Professor in the Department of Communication Studies at Concordia University.

www.fluxnetwork.net
This project is centred on Benjamin Forster’s attempt to fuse the blood cells of artist Billy Apple with that of a canine, to produce a viable human-canine hybridoma or an immortal cell that contains both human and canine DNA. The work consists of a simple microscope containing a histology slide sample of this almost invisible beast.

Accompanying this banal scientific artifact is a series of drawings that coopt imagery of hybrids and monstrosities of science from both literature and popular culture. This embodies the contradiction between scientific ‘reality’ and its expression within popular consciousness. The monstrous kynical cell is reduced to an almost invisible dot, unable to live outside of the supports of the laboratory, preserved dead between glass. While the surrounding drawings reinforce stereotypes and play with the bombastic representation of human anxieties over scientific interventions. Step right up and see this freak of nature.

Suggested by the title, underneath this veneer of incommensurable ‘realities’, is Benjamin Forster’s interest in the history of Cynicism and the disparity between its contemporary usage in contrast to its origin in ancient Greek philosophy. Cynicism around 450BC was a philosophical idea strongly rejecting convention, including religious customs, wealth, power and fame in order to pursue a virtuous life through the rigor of reason. As such there is no sanctioned cynical doctrine, and all that can be known about the early cynics is through the writing of others. The origin of this term stems from the Greek term kynikos, meaning dog-like. This insult was used to describe Diogenes, the poster boy for cynicism, who lived on the streets and rejected all conventional manners, masturbating in the market. Benjamin sees a similarity in the ‘ideal’ position of contemporary artists and scientists within society, which he described rather by contemporary cynicism. Benjamin Forster offers his Kynical Cell as a totem for this forgotten kynicism.

Disclaimer: Billy Apple and the fortunate canine were not harmed in the making of this work.

This text was written with pure intentions about midway through this project – two years after the initial research and six months before this exhibition. Now already reflecting back I am halted by the realisation that this text, this catalogue, the wall didactic, and their implicit assumption as unthinking, contradicts my intentions. Fuck it. This work is not about educating you, or delivering an artifact for contemplation, or even worse entertaining you. This work is intended as a gesture, frail and pathetic as it is, toward remembering the ancient cynics. Remembering their originary attack against the abstraction of idealism (words, spoken and written) through the primacy of the body. I believe this remembrance is of great importance as words subjugate the visual arts and as our museums/galleries are becoming safe spaces. Offence is relegated, as pricks and cunts are obfuscated. Polite society silences the body wrapping it in only sanctioned words.

Holding Peregrinus in mind, I ask you to burn this catalogue. See how words can warm you this winter.
Benjamin Forster (born 1985 Canberra, Australia, lives in Perth) utilises drawing, digital and biological technologies, installation and print in order to trace the boundaries of logic, the function of economy and the role of the artist in art making. Forster’s recent solo exhibitions have been A Luminary Series of Records Played in Parallel, Perth Cultural Centre, Perth, with Sohan Ariel Hayes (2012); at Fremantle Arts Centre, Perth (2011); and Rational, CCAS Manuka, Canberra (2010). Forster has also participated in the group exhibitions, NEW13, ACCA, Melbourne (2013), Primavera, Museum of Contemporary Art, Sydney (2012); Spatial Drawing, VENN Gallery, Perth (2012); and How to talk to a mountain, Paper Mountain, Perth (2012).

w >> emptybook.net

Kynic is part of Science Fiction, a Centenary of Canberra Project proudly supported by the ACT Government and Canberra Contemporary Art Space.
There is a Sufi poem from the thirteenth century that I first encountered within Kim Stanley Robinson's quintessential work of radical science fiction, the 'Red Mars', 'Green Mars', 'Blue Mars’ trilogy. The first colonists of Mars become truly Martian as their bodies begin to process food grown from the red planet’s mineral enriched soil.

The poet is by Jalāl ad-Dīn Rūmī and the opening lines read, 'I died as mineral and became a plant'. Rūmī doesn't articulate a Darwinian evolutionary model but captures our literal genesis from dead matter to plant life, from animal to human and beyond. Rūmī treats fear of change and the inevitable violence with a rational and unemotional disregard that's liberating. The poem has a broad following. It's not just cross-culturally appealing, but seems able to speak to strange bedfellows; rationalists, spiritualists and revolutionaries, albeit with differing emphasis. In the context of border crossings, be they inter-planetary or not, the poem speaks to the nature and point of evolution. 'Why should I fear? When was I less by dying?'

In this series of TechnoCulturalBodySuits I explore a triptych of ethics and orientations toward the membrane - the body, culture, unions, the borders of the State. The membrane is to be concurrently violated, endured, and defended. Each BodySuit references the necessary violence of biological progression with the centrality of the human body in regards to cultural conceit and social-political mortality. The ethics are competing and contradictory, but there is a progressive polemic that is trying to emerge. It is a contradictory but nonetheless tangible argument I’m attempting: an argument for the dissolution of oppressive borders and the simultaneous support of sustaining borders, some of which (and here is the paradox) are the very same borders, although being deployed for grossly different purposes. Borders are plastic, malleable, impermanent, renewing and dissolving and biopolitically antithetical, and real world referents are embedded in the works. Stuck somewhere within the play of this fluid, complex binary, there is the active embodiment of facing and living with the nature of a form, accepting and fighting its mutually enabling and confining character, appreciating it as beautiful and intricate and base and facile.

'I died as freedom and enjoyed much pleasure'

This BodySuit is an image of contemporary culture as a skin that both enables and constricts. Through sucking and blowing the suit literally constricts and releases, allowing and determining movement potential. The BodySuit balances degrees of pleasure and pain (and does draw technology from S&M practices) combining domestic labour and lifestyle performance in an act of erotic play and hegemonic conformity.

'I fought for my body and it died'

The final BodySuit links defence of internal human form to the defence of national sovereignty. The body is defended from cancer and silicon implants, encircled by the ultimate device of border violation - the reaper drone. Similar to the rights of workers and the union movement, which are both summarily painted as dying forms, human rights, gender, sexuality and class equality, depend on the sovereignty of districts and nations in order to be empowered. They also rely on the solidarity, political pressures and economic imperatives of international movements. Consider old and new rationales of an international militia for the defence of sovereign nations.

Thanks: BodySuits #1 and #2 were constructed with costume maker Kristy Armstrong and BodySuit #3 features fabrication and electronics by Pierce Davison, and production was managed and assisted by Laura Boynes.
Sam Fox is a performance maker who draws on his dance, visual theatre and writing practice to create hybrid works that entail finely crafted challenges for audiences. Sam is committed to a dual practice of facilitating creative engagement and collaborative projects in community alongside his original contemporary performance practice.

Sam is the founder/director of Hydra Poesis which explores critical exchange and inquiry with audiences. He is a BA Dance Graduate of WAAPA (2003). While building his own performance practice Sam has developed as a facilitator and producer of multi-arts, community based projects, festivals and research programs. This exchange is built upon the potential for imagery and action as a dynamic carrier of shared political and cultural investigation.

http://hydrapoesis.net

Assisted by the State of Western Australia through the Department of Culture and the Arts.
The piece *Fibre Reactive* is a unique biological garment. By its very existence, this dress aims to raise debate around the contentious manipulation of living entities as commodity and culture / nature interfaces, body – cloth dynamic. This work uses microbiology as an artistic tool.

*Fibre Reactive* consists of the fungi *Pycnoporus coccineus* common name (orange bracket fungus). The mycelium of the organism has been grown to produce the living surface. The orange surface produced is an adaptation of the organism’s fruiting body stage. This is due to the impact of artificial external manipulation within the laboratory; this context re-locates the fungi within a pseudo-environment. The dress is initially supplied with nutrients that mediate - replicate its needs within the natural environment. The organism is now reliant on technology and human intervention to survive.

New technologies greatly impact cultural construction. They rapidly shape our understanding of reality, identity and interaction with the environment. It is therefore important for cultural practitioners and theorists to debate the consequences and to evaluate these potential futures, as they will inevitably impact upon sociological and cultural awareness.

Our relationship to technology can be described as ‘the “post human” condition, where the products such as make-up and surgery, drugs, mobile telephones’ have become so familiar within our everyday lives that they become ‘technological extensions of our biological bodies’.

We are so comfortable with these technologies that they have ‘become normalised’. The development of biotechnologies takes technological integration beyond the mere mechanical to a real primal level. As a species, humans have separated themselves from the immediate experience of the natural world with technology. Through intervention we have constructed a “cultured” experience of nature. This mediated experience, manifested by culture industries, creates a disassociation to the origin of the raw materials. *Fibre Reactive* confronts the viewer with the physical actuality and visceral experience of a living garment through the juxtaposition of the familiar with the “alien”.

It is the intention of the work to rupture the meaning of garment and its role in commodity culture and draw attention to our own mortality.

Franklin is currently a PhD candidate (Philosophy) and academic in Cultural History and Theory at The School of Communications and Contemporary Arts, Edith Cowan University. Her various research projects investigate the role art/science collaboration has in generating public awareness and debate raised by developing biotechnologies or investigates ecology. She has a particular interest in creating artworks that explore an engagement with the non-human, such as fungi, plants and animals. During her Master of Arts, she was awarded an artist residency at SymbioticA: Centre for Excellence in Biological Arts, UWA. Since then she has collaborated with scientists and artists to produce artworks and conduct art/science workshops for festivals, galleries and schools.


Special thanks to Elizabeth Halladin and Gary Cass at The Faculty of Natural and Agricultural Sciences. Professor K. Sivasithamparam at the School of Earth and Geographical Sciences, Jane Coakley, Dr Iyon Zurr, Oron Catts, SymbioticA: Centre for Excellence in Biological Arts, Dr Miranda Grounds and Dr Stuart Bunt at the School of Anatomy and Human Biology, the University of Western Australia. Dr Nicola Kaye and Dr Christopher Crouch.
Image Credits: Robert Firth and Sharon Custers (still from film)
For several years now, a trend in skin care products has been seen: beyond the classic cosmetic product, a new type of hybrid product between cosmetics and pharmaceuticals has emerged. These so-called “cosmeceuticals” claim to have medical or drug-like benefits on the skin. To advertise these products scientific and technical terminology is often used, which draws on popular narratives of bio-technological possibilities. This marketing language evokes the body’s performance, manipulation and enhancement, with a focus on its cellular and subcellular dimensions.

CELLULAR PERFORMANCE focuses on the names of cosmeceutical products, which are supposed to communicate their benefits in a brief and compelling way. While these names serve as instruments to evoke a total control over biological processes, they suddenly demonstrate their poetic potential once taken out of their original context.

In an ironic gesture, CELLULAR PERFORMANCE draws on this terminology and applies it directly to the physiological material it makes reference to: skin cells have been manipulated in the laboratory to form letters and words, in order to visually “reincarnate” the promises of the cosmeceutical industry. Over several months, selected skin cell lines were cultured and, in the course of numerous experiments, the cells were engineered to grow into defined micro-structures using techniques such as cell patterning and microcontact printing. The outcome of this procedure was then documented by means of live cell imaging and time-lapse microscopy.

The time-lapse recordings show an attempt at controlling biological matter, while at the same time juxtaposing the agency of language with the agency of cell material. While both language and cells can be used in an instrumental way, moments of successful stabilization are constantly alternating with moments of unpredictability, flux and, in the case of cell material, disintegration.

Researched and developed at SymbioticA (thanks to G. Ben-Ary, O. Catts, J. Coakley, C. Cobillis, C. Cmielewski, Dr. Hodgetts, Dr. Zurr; in collaboration with the MRG and the CMCA, both UWA) and the Laboratory of Stem Cell Bioengineering (in collaboration with Dr. Adrian Ranga), EPFL, Switzerland.

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Verena Friedrich is an artist working in various disciplines such as installation, video, sound and biological practice. In her work, she examines the interrelations between the body, science, technology and society. Her projects have been presented internationally in the context of media art festivals, exhibitions and conferences, and have been granted the International Media Award for Science and Art from ZKM Karlsruhe, the sponsorship award of the Saxon Ministry of Science and the Fine Arts, a nomination for the transmediale Award 2008 as well as a special mention in the VIDA 13.2 Art and Artificial Life International Awards. She holds degrees from the Academy of Media Arts Cologne and the University of Art and Design Offenbach, both in Germany. She is currently based in Cologne.

www.heavythinking.org
Membranes are selectively permeable structures, controlling the exchange of ions in our synapses, or structuring the flow of surveillance information at airport security. They are the portcullis and drawbridge regulating access to a Norman Castle, a filter of privilege; they are the legal pressure valve that transported the poor and disaffected to Australia in a risible attempt to rid England of its criminal class.

It is easier for a camel to pass through the eye of the needle, than for a rich man to enter into the kingdom of heaven.¹

We are defined, structured and bounded by membranes, selective barriers that function at a molecular level within our bodies and operate at the macro scale as socio-political boundaries.

Supereste ut Pugnatis (Pugnatis) ut Supereste² drifts in these interstitial spaces between biology, politics, culture and history constantly recalling the functional significance of the membrane as border, as a cultural and linguistic filter, as a generator of difference.

SPPS is offered as an omnisexual bacterium ingesting histories and narratives that associate through powerful metaphorical bonds.

Antique Chinese gunpowder rocketry³ carrying payloads of poisonous and infected material hybridise with the morphology of the Bacteriophage⁴. The payload of these mutant forms, glass cylinders containing infected eggs pay ironic homage that reprises the origins of modern bio-warfare research, where chicken eggs were the bio-reactor of choice at the Chemical Defense Establishment of Porton Down near Salisbury UK.⁵

And so to the slippery membrane of language, a tissue of words that wrap us in culture and identity and one that attempted to render Australia as white as egg albumen, protecting these shores from the influx of Chinese migration, a migration according to the xenophobes, as yellow as egg yolk.

心灵的控制首先在于物理的掌握。这是常人难以置信的简易。真正的掌握来自于宁静，从意图的思考到最终的言行。宁静是最高尚的美德。一位男士或女士的静坐是多么少见。

My French raincoat (a membrane of sorts) bears the legend Impermeable, I can assure you it is not, like most membranes worth their salt it is semipermeable!

That mental control depends, first of all, on physical mastery, is so obvious that few believe it. Real control begins from stillness, from deliberation of manner, and eventually speech and action. Stillness remains the rarest of virtues. How seldom does one see a man or a woman sitting still?

These words are an example from hundreds of pages of Dictation Tests that operated in all Australian ports of entry from 1901 until 1958 with the primary function of excluding undesirables (specifically Asians) from migrating.

Perhaps another for good measure, its jingoism recalling John Howard’s obsession with Cricket trivia as a criterion for citizenship.

The swagman wrapped his gnarled and desiccated digits round his minuscule ukulele and with prodigious and egregious deficiency of musicology essayed a resounding, cacophonous rendition of ‘Waltzing Matilda’ that caused a phobic frog to hurl itself suicidally into a brackish billabong.

Maybe that is Impermeable!

¹ The New Testament, Matthew 19:24, The Eye of the Needle was a small gate in the walls of Jerusalem.
² Supereste ut Pugnatis (Fight to Live) the motto of the Chemical Defense Establishment.
⁴ A Virus that infects and then replicates within a Bacterium.
⁵ In 1940 biological warfare work began at Porton Down, UK in a highly secret autonomous group called Biology Department Porton now known as the Chemical and Biological Defense Establishment.
Dr Nigel Helyer (a.k.a. DrSonique) is an independent sculptor and sound-artist. He is the director of a small multidisciplinary team Sonic Objects; Sonic Architecture which has forged an international reputation for large scale sound-sculpture installations, environmental public artworks, museum inter-actives and new media projects.

His practice is strongly interdisciplinary, linking a broad platform of creative practice with scientific research and development manifest as works that embrace both the natural and social environment. Nigel is a longstanding collaborator and advisor to SymbioticA at the University of Western Australia, realising such projects as GeneMusik, the insect installation Host and as Artistic Director of the infamous LifeBoat project 2004-2006. He has also worked as an artist/researcher at the Paul Scherrer Institut, Switzerland (as part of the Artists in Labs programme) and is artist in residence at the Institute for Marine Antarctic Studies at the University of Tasmania.

www.sonicobjects.com

Thanks to: Dr Stuart Hodgetts; Dr Richard Wu; Liang Huang; Duncan Bond; Sarah Davis; Cecelia Cmielewski

Assisted by the State of Western Australia through the Department of Culture and the Arts.
Microphones in the desiccator, a discard from the Anatomy laboratory at the University of Western Australia, listen to the ‘subject’ inside as its physical form passes away, tempered by the flow of air. The delicate, hand made to order glass pipes that channel air and audio through the top of the desiccator were made by a master craftsman servicing researchers at the University, his services since rendered unnecessary by plastic disposables, which bring with them their own issues of decay.

Decay can be a sudden, long, visible or invisible process. It may take place across vastly different time scales and or in forms that are difficult for our human senses to comprehend. In Sound of Decay, a computer program is configured to ‘listen’ to the events inside the desiccator. It processes the sounds to bring them into an audio frequency range we may comprehend, and joins them together to cut out inevitable long periods of silence. The most common sounds generated by decay are extremely low and soft sounds, mostly inaudible to the human ear. Here they are amplified and transposed up into the range of human hearing. The desiccator provides a perfect auditorium for the performance, complete with an amplifying stage, for our listening appreciation.

Rather than feature the stereotypical ‘lab rat’ generally associated with science laboratories world over, this container highlights a more recent addition to the laboratory animal selection. It is an animal Australians love to hate: the Cane Toad. Introduced into Australia in June 1935 by the Bureau of Sugar Experiment Stations, it was brought from Hawaii in an attempt to control the native cane beetle that was devouring cane plantations in Queensland. The toad is now feral, having spread across the top end of Australia, most recently entering Western Australia, damaging flora and fauna in its path. Australia’s loathing of the animal and its expanding infestation is well documented culturally. An advertisement for Tooheys beer in 2007 showed New South Wales residents at the New South Wales/Queensland border attracting the toads with lights, so they could hit them back across the border with golf clubs¹. Researchers are racing to find ways to stop the spread of the toad before infestation is complete across the continent. In Sound of Decay, the Cane Toad is in a more passive display that the one popularized in Australian culture, which has included children dressing them up as pets, smoking the glandular excretions, and driving in a way as to kill as many as possible. In this installation, it rests on its final, microphonic bed, and through close listening to one toad, we can hear what the demise of them all may sound like.

Cat Hope is a composer, sound artist, performer and academic. She is a classically trained flautist, self taught vocalist and experimental noise bass player with an active performance profile as a soloist and in music groups. She is the director of the internationally recognised music group Decibel and has toured internationally as a noise artist. Her installations have been show at ISEA (Japan, Tallin), Liquid Architecture, the Totally Huge New Music Festival, The Perth International Arts Festival and in Singapore, USA, Japan and Finland. Cat is currently a researcher at the Western Australian Academy of Performing Arts at Edith Cowan University. 

This work was conceived by Cat Hope and Rob Muir, as the Metaphonica Sound Collective, with funding from an Edith Cowan University Faculty Research Grant. The computer programming is by Stuart James, based on concept by Bruce Murphy.

www.soundofdecay.com

Assisted by the State of Western Australia through the Department of Culture and the Arts.
During the residency, I had the opportunity to further my knowledge of continuous cell culture and engage hands-on with contemporary genetic engineering techniques. I was particularly fascinated by the ability of researchers to transform healthy primary cells into immortal cell lines – cells that will replicate indefinitely when maintained in appropriate laboratory conditions. To learn more about this process, I worked with HEK 293 cells, a cell line established in the 1970s from the kidney of an aborted fetus. The cells were transformed into an immortal cell line through the introduction of sheared adenovirus 5 DNA. The cell line name, HEK 293, refers to the origin of the cells, as human embryonic kidney cells, and the experiment number – 293.

Since its original development, the HEK 293 cell line has been further modified to produce several variants, including the 293T derivative which includes Simian virus 40 (SV40) DNA. The modification resulted in the expression of the SV40 large T antigen – a protein that assists in viral genome replication. This makes the 293T cell line easier to transfect and genetically modify.

With the assistance of molecular biologist Jill Muhling at the University of Western Australia, I was able to transform HEK293T cells using plasmids incorporating red (LV-dsRED) and green (pEGFP-C1) fluorescent proteins originally derived from marine invertebrates. This process introduced new genetic material into the HEK293T cells. As a result, the cells expressed a red, or alternatively green, glow when exposed to specific light conditions.

The artwork HEK 293T comments on the transformation of the HEK293T cell line, as well as the strange and uncanny nature of bio-engineered micro-organisms that incorporate genetic material from viruses and other organisms.

The artwork HEK 293T includes two inter-related video works that reference the origin of the HEK 293 T cell line, as well as the transformation of the cells with green and red fluorescent proteins. Cell flasks containing the preserved genetically modified HEK 293T cells cultured at **SymbioticA** are also included as part of the video display. The audio component is comprised of time-lapse footage of HEK 293T cell movement translated into sound.
Svenja Kratz is a Brisbane based artist interested in interdisciplinary practice, particularly the intersections between art and science. For the past five years she has been working in the area of cell and tissue culture in a creative partnership between the Creative Industries Faculty and the Institute of Health and Biomedical Innovation at QUT. During this time she has produced numerous mixed media and bioart works that comment on her engagement with contemporary biotechnologies including primary cell culture, microbiology and basic tissue and genetic engineering. She is currently a Catalyst working across Art, Science, Technology and Enterprise at The Edge – a digital cultural centre at the State Library of Queensland, and is completing a PhD in ArtScience at QUT.

www.svenjakratz.com
The ‘victimless leather’ is grown from immortalised cell lines which are cultured and form a living layer of tissue supported by a biodegradable polymer matrix in the form of a miniature stitch-less coat-like shape.

The victimless leather is grown inside a custom made perfusion chamber [inspired by the organ perfusion pump originally designed by Alexis Carrel and Charles Lindbergh]. It is an automatic dripping system which drips into the polymers and feeds the cells. The Victimless Leather is an ironic project is concerned with growing living tissue into a leather-like material.

Humans, the naked/nude apes, have been covering their fragile bodies/skins to protect themselves from the external environment. This humble act for survival has developed into a complex social ritual which transformed the concept of a ‘Garment’ into an evocative object that cannot be taken on its face value. Garments became an expressive tool to project one’s identity, social class, political stand and so on. Garments are humans’ fabrication and can be explored as a tangible example of humans’ treatment of the Other.

By growing Victimless Leather, the Tissue Culture & Art (TC&A) Project is further problematising the concept of garment by making it Semi-Living.

This artistic grown garment will confront people with the moral implications of wearing parts of dead animals for protective and aesthetic reasons and will further confront notions of relationships with living systems manipulated or otherwise. An actualized possibility of wearing ‘leather’ without directly killing an animal is offered as a starting point for cultural discussion.

Our intention is not to provide yet another consumer product but rather to raise questions about our exploitation of other living beings. We see our role as artists as one in which we are providing tangible example of possible futures, and research the potential effects of these new forms on our cultural perceptions of life. It is not our role to provide people with goods for their daily use. We would like our work to be seen in this cultural context, and not in a commercial context.

As part of the TC&A project we are artistically exploring and provoking notions relating to human conduct with other living systems, or to the Other. This particular project will deconstruct our cultural meaning of clothes as a second skin by materialising it and displaying it as an art object.

Tissue culture technology seems to promise us [among many other things] an illusion of a victimless utopia. TC&A argues that this technologically mediated victimless utopia is but a transformation of explicit violence into a hidden implicit one on a much greater scale. As urban Western culture seems to find it hard to stomach images of real violence [as opposed to cinematic and constructed simulated violence] its obsession with ever growing meat and leather consumption has inevitably created increasing amounts of victims from the natural environment to other animals and humans. There is a shift from ‘the red in tooth and claw’ of nature to a mediated nature. The victims are pushed further away; they still exist, but are much more implicit. For example, parts of the living are fragmented and taken away from the context of the host body (and the mere act of fragmentation is violent) and are introduced to a technological mediation that further ‘abstracts’ their livingness. By creating a new class of Semi-Being, which is dependent on our technology for survival, we are also creating a new class for exploitation. Another point to remember is that the cells that form the tissue of the “victimless leather” need to be fed, and that nutrients used contain animal derive products including 10% fetal calf blood serum.

This piece also presents an ambiguous and somewhat ironic take into the technological price our society will need to pay for achieving ‘a victimless utopia’.
Tissue Culture and Art Project is Oron Catts and Ionat Zurr. Oron Catts is Director of SymbioticA, The Centre of Excellence in Biological Arts School of Anatomy Physiology and Human Biology, The University of Western Australia. Oron Catts is an artist, researcher and a curator at the forefront of the emerging field of Biological-arts, whose work addresses shifting perceptions of life. Dr. Ionat Zurr is an artist, researcher and the Academic coordinator at SymbioticA. Catts together with Zurr formed the internationally renowned Tissue Culture and Art Project (TC&A) in 1996. TC&A was set to explore the use of tissue technologies as a medium for artistic expression. Catts & Zurr are investigating our relationships with the different gradients of life through the construction/growth of a new class of object/being – that of the Semi-Living.

The TC&A project was the model on which SymbioticA - The Centre of Excellence in Biological Arts at The University of Western Australia was established. It is now a core research project within SymbioticA. Catts & Zurr are considered pioneers in the field of biological arts and their research been published widely, exhibited internationally and their artwork has been collected by MoMA New York. Both were Research Fellow at the Tissue Engineering and Organ Fabrication Laboratory, Harvard Medical School, and worked with numerous other bio-medical laboratories around the world.

www.tca.uwa.edu.au

Thanks to: Professor Arunasalam Dharmarajan from the School of Anatomy and Human Biology, UWA.

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With an emphasis on experiential practice, SymbioticA encourages a better understanding and articulation of cultural ideas around scientific knowledge and informed critique of the ethical and cultural issues of life manipulation.

www.symbiotica.uwa.edu.au

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33