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BLOOD

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Taboo / commodity / symbolism / paint / mystery / ubiquitous / variety / art / medical / gothic / phobia / myth / science / painting / race / discovery / darkness / provocative / biological / medium /gruesome / fluid /

Blood

Lynn Scarff /
Director, Science Gallery Dublin, and BLOOD Curator

Ian Brunswick /
Programme Manager, Science Gallery Dublin

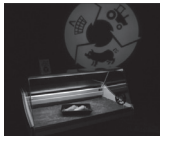
BLOOD took us by surprise. In developing this exhibition, we've been amazed by the diversity of ways that blood captivates. From artists to surgeons, designers to scientists—in any two contexts blood has an entirely different meaning. It can be a life-saving donation, or an obsession with the undead, a taboo or a commodity. Sometimes its symbolism is treated ironically, while other times it is grotesque, mythical or medical.

Our human preoccupation with blood runs deep, and as a species we've had plenty of time to prod and poke, paint and proselytise about blood. So what remains? What mystery persists about blood, and how does this exhibition probe it? Why are we still interested in blood?

Perhaps the answer lies in the fact that blood continues to turn up—its presence is ubiquitous, yet varied. It is deeply rooted in the practice of art and science over millennia. It appears in turns of phrase, in cutting-edge medical treatments, in paintings, phobias and myths. It has inspired great medical advancements, spurred on notions of race and 'difference', driven some of our greatest discoveries and successes, and been instrumental to our darkest superstitions.

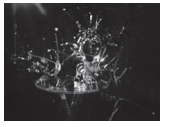
Indeed, in developing this exhibition we purposely wanted to explore all aspects of blood, to take this

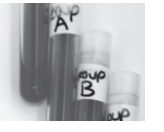
broad human theme and explore it through the work of artists, surgeons, medics, feminists, designers, engineers, scholars and architects. The result is a blood-rich show, provocative, grown-up and challenging. BLOOD propels you into the minds and creations of an eclectic mix of people and disciplines laying bare the myriad ways that we have used this marvelous liquid as a research tool, biological fluid, artistic medium, identifier and symbol. Works in the exhibition explore the gruesome and the gothic, the humorous and the poetic, the medical and scientific. Hermann Nitsch's piece *138th Action* presents a perspective utterly different than the inter-species uncanniness of Marion Laval-Jeantet and Benoît Mangin's *May the Horse Live in Me !*.



But blood can be humorous—a good drink and the company of a friend can warm your blood. Chella Quint's *STAINS™* laughs at our society's obsession (or repression) around menstrual blood, imagining a near future where taboo is rendered trendy. John O'Shea's *Black Market Pudding* reinvents what may be our most common interaction with non-human blood by producing a blood sausage made with blood from a living pig.

BLOOD is central to cultural obsessions with ethnicity, family, vampires and passion, but it isn't all myths, prejudices and fright. Blood is physiologically linked to our emotions. You really can die from 'broken heart syndrome', better known as takotsubo cardiomyopathy. Well-known feelings of 'seeing red', or to have your 'blood run cold' were idioms long before a modern medical understanding of simple diagnostics like blood pressure or blood sugar, and many pieces in this show walk the line between the colloquial and the clinical. Charlie Murphy's sculptures transform medical-grade glassware into emotionally charged sculptures that contrast scientific utility with evocative anatomical imagery. Works by Denis Roche and Shaun McCann examine the revolutionary procedure of stem cell transplants and the human side of medical isolation due to compromised immune systems, of which blood is a critical component. *MyType* asks our visitors to give their own blood donation. A quick pinprick and they can leave behind a sample, adding their own contribution to BLOOD.





This common bodily fluid is something special—both medically and metaphorically, and no two works present this organic material in the same light.

Just as each story is different, whether sinister or sincere, seductive or surprising, no good story is complete without a bit of blood.

The Blood of Healing

Luke O'Neill /

Immunologist, Academic Director of Trinity Biomedical Sciences Institute, Chair of Biochemistry at Trinity College Dublin, and BLOOD Curator

To an immunologist blood is everything. Even James Joyce knew about the immune system when on the opening page of *Ulysses* Buck Mulligan mocked the turning of wine into blood saying, "A little

trouble about those white corpuscles". Those white corpuscles have caused trouble for immunologists ever since, as it is these cells that defend us from infection. Not for the immunologist, the boring red blood cell whose sole function is to carry oxygen. The watery, colourless cells called leukocytes were seen as peculiar when they were first seen down the microscope. They lacked the glamour of the donut-shaped red blood cell. Soon, however, from the work of the Russian biologist Ilya Mechnikov and the Trinity College Dublin graduate Almroth Wright, they would inform medicine like no other cell would.

The blood contains millions of white blood cells per millilitre. Their job is to sense an infection in the blood and then sound the alarm, or be transported into tissues through the blood highway to the site of infection. Inflammation happens at sites of injury (for example, when you sprain your ankle) or infection, and this complex biological process is all about the blood and the white blood cells. The injured part turns red because blood vessels expand and blood rushes there to bring the storm-trooping white blood cells. This makes the affected part feel hot. It becomes swollen because the white blood cells leave the blood vessel to get where the action is. In doing so, they bring some plasma (the name of the fluid in blood) with them. Finally, the white blood cell can get up close and personal to the invader and, if successful, eliminate it. What sometimes remains is pus, the most unglamourous of biological fluids, which is mainly made up of the corpses of the white blood cells killed in battle.

There is vast complexity with many different types of white blood cells, all with different jobs to do. The monocyte will eat up bacteria and send out signals to the rest of the immune system. The neutrophil will spew bleach onto the invading bugs, killing them. The B lymphocyte will make antibodies to help neutralise the invader. It's a dirty business that can go wrong, as can be seen with Ebola virus, which provokes the blood to such an extent that the blood vessels start to leak, giving us the horror story of hemorrhagic necrosis. Then there are the inflammatory diseases, where the white blood cells are drawn from the blood into our tissues, causing havoc. If they are drawn to the joints they cause rheumatoid arthritis, to the brain multiple sclerosis, to the skin psoriasis or to the lungs asthma. This makes the immune system a major focus of biomedical research, as if this process can be limited, these diseases might be kept at bay. If we can understand why this deviation happens, we might find a cure. It is signals from the white blood cells that irritate the tissues being invaded. Limiting these signals is a major focus for the biotech sector who led the charge on cloning the genes that make them and developed drugs to limit these genes. One example is the drug Enbrel, which jams a signal called TNF made in abundance by white blood cells in rheumatoid arthritis. Enbrel and pharmaceuticals like it are some of the biggest selling drugs at the moment, benefiting patients and reaping rich rewards for the companies that make them. Enbrel is made in Ireland, and every week sixty litres of the drug is sent down the Liffey and exported. This makes $60m per shipment, showing us

the value of targeting a blood protein in disease. If you were to fill a can of coke with Enbrel it would sell for $40,000, making it more expensive than gold.

Most of the time, the blood and white blood cells are our friends, protecting us from harm and healing our injured bodies. Millions of years of evolution have honed the system to keep us one step ahead of microbes in the most important arms race of them all, a race that keeps our species going. We celebrate blood in this exhibition, where you will see delicate glass sculptures of particular blood vessels, measure your pulse pushing blood around your body, have your blood type tested, and learn what happens when you donate blood. You can give back what your blood has given to you — your vitality. We hope you will be enthralled by the many exhibits exploring this most vital of fluids.

Blood Matters

Shaun McCann /
Professor Emeritus of Haematology and Academic Medicine at St James' Hospital and Trinity College Dublin and BLOOD Curator

Blood is essential for life but it is surrounded by many strange beliefs. This exhibition will take you on a journey from the depths of history and will explore the many aspects of blood which influence our society today.

The removal of small amounts of blood as a cure for many maladies is an example of a useless and sometimes harmful idea that held sway in medical circles for millennia. Removing blood was believed to restore the balance between the four humours; blood, black bile, yellow bile and phlegm. It was an imbalance of these humours that was thought to be responsible when a patient had a disease. The theory was based on the idea that menstrual bleeding was a release of 'bad humours'. In spite of the upsurge in knowledge of physiology in the 17th century, it is extraordinary that the practise of bloodletting continued until the end of the 19th century. Indeed, two Presidents of the new United States of America were almost killed by overzealous bloodletting.

Some ideas fail, however, because of lack of technology. Although attempts at blood transfusion have been made since the 17th century, blood transfusion on a large scale only became a reality during World War II. Initially blood was transfused in glass bottles but the plastic bag designed by Carl W. Walter and W. P. Murphy in 1950 replaced the glass bottle. The plastic bag was tested extensively during the Korean War. Other developments, like the addition of nutrients further extended the shelf life of blood. Nowadays blood is collected, stored and transported by van, car or even aeroplane. This widespread availability of blood and its constituents has had a major beneficial effect on medical practice.

In recent times one of the greatest medical scandals was the HIV/AIDS story. In this instance prejudice, politics, fear, ignorance and sexual orientation, combined with the belief (not unlike the bank scandal in Europe in 2008) that 'the system was too big to fail' prevailed for many years. Ultimately the 2008 Nobel Prize for Physiology or Medicine was awarded to Professor Luc Montagnier in Paris for his discovery of the HIV virus.

It is a strange coincidence that the two most popular vampire writers in the 19th century were Irish, Joseph Thomas Sheridan Le Fanu and Bram Stoker. Both Stoker and Le Fanu studied at Trinity College Dublin and were Auditors of the College Historical Society. Blood has been mentioned in myth, folklore and history since the earliest times and has frequently been incorporated into religious rituals. Herodotus recounts that the Scythians drank the blood of their slain enemies, using their skulls as drinking vessels. The ancient Romans believed that epilepsy could be cured by drinking the blood of a slain gladiator. They also had some rather strange ideas about menstrual blood believing that: “on the approach of a woman in this state (menstruation), wine will become sour, seeds which are touched by her become sterile, grafts wither away, garden plants are parched up, and the fruit will fall from the tree beneath which she sits”.

The idea that blood contains something immeasurable is also present in the Old Testament. In Leviticus 17:11 “For the life of the flesh is in the blood” suggests that blood contains the soul. Apart from the sin of drinking or eating blood, the Bible may also tell us something about the genetics of bleeding diseases. Since biblical times, observers have commented that some people continued to bleed after relatively minor injury. In the Talmud, the Rabbi Judah says that although circumcision was advocated for all male children, the decision to circumcise could be waived if two brothers bled abnormally and died after the event. This is probably the first recorded recognition of an inherited bleeding disorder that occurred only in males, which we now call haemophilia.

The exhibition will also explore the use and origin of human stem cells which have been successfully used for treatment of blood cancers for over thirty years. Strangely, the discovery of human stem cells emerged from research carried out during the development of the atomic bomb during World War II.

The stem cell transplant unit in St James’ Hospital has made a contribution to the well-being of patients undergoing stem cell transplantation. The introduction of a multimedia art intervention, known as *OpenWindow - Remote Presence*, has been studied and shown to reduce anxiety in patients undergoing stem cell transplantation. Likewise, *OpenWindow - Remote Presence* has been shown to favourably alter expectations of patients undergoing stem cell transplantation.

Blood appeals to everyone; from the myth that it contains the soul to its use in childbirth, surgery and chemotherapy. BLOOD will explore the many facets of this remarkable substance.

Blood Sucks: Vampires, Taboos and Popular Mythologies

Clemens Ruthner /
Professor of German and European Studies, Director of Research at the School of Languages, Literatures and Cultural Studies at Trinity College Dublin, and BLOOD Curator

"[The vampire] has a body and it is his own body. He is neither dead nor alive; but living in death. He is an abnormality; the androgyne in the phantom world; ... The object of the vampire is to suck blood."

This oft-quoted definition by the British scholar Montague Summers from the 1920s points at the scandal of the vampire: he, she or it is a transgressor of clear-cut cultural boundaries which the bloody monster deconstructs: life and death, body and soul, nutrition, procreation and contagion. The vampire hovers at thresholds, it's a common motif that it has to be invited first to cross them.

The first to invite in the vampire were the intellectuals of early Enlightenment. The monster has demonic predecessors in Mesopotamia, biblical times and Greek Antiquity, in the revenants (visible ghosts or animated corpses) of the Nordic sagas and the 'shroud-eaters' of early modern plague myths. However, its actual cradle stood not in Transylvania, as popularised by Bram Stoker, but in Serbia. Around 1730, strange occurrences took place in the two villages of Kisolova and Medvedja, producing disturbing news about the deceased returning to prey on the living. These reports spread through Europe quickly and popularised a new word: the Vampyre. European health scientists, philosophers and theologians between Vienna and London discussed the possibility that the dead could stay alive in their graves and feed on blood but dismissed the cases quickly. *The X-Files* of the Enlightenment were closed.

It took the cultural zeitgeist of European Romanticism around 1800 to revive the undead under the guise of love and death, the key motifs of literature at the time. Goethe's *Bride of Corinth* saw the light of the day along with Samuel Colderidge's *Christabel*. But most prominently, in 1816 Lord Byron's personal doctor and secretary John Polidori started writing *The Vampyre*, under the same roof where Mary Shelley started *Frankenstein*. In 1897, Stoker's *Dracula* novel fixated the narrative of modern literary vampirism as an invasion by a sinister East European, adding a touch of Darwinism, imperialism and xenophobia. Some fifteen years before, Stoker's Irish idol Sheridan Le Fanu had already invented the lesbian vampire: Carmilla.

In the 20th century, film elaborated on this literary heritage, starting with the first vampire film that poached Dracula from the British Empire: *Nosferatu* by the German director F. W. Murnau in 1921. Some hundred films and thousands of books later, the US author Anne Rice created the postmodern version of the undead in her *The Vampire Chronicles* series. Rice's vampires were less monstrous, more human, hip and amiable. Her compatriot Stephenie Meyer undid the gory effects of tradition with her glitteringly reluctant vampire Edward in *The Twilight Saga*. Meanwhile, a whole branch of the dark wave subculture, the so-called Vampire Goths, had embraced the undead as a

role model. This made the American anthropologist Norinne Dresser wonder about the appeal of vampirism to Western culture, and she concluded:

"The three major attractions of the vampire are totally compatible with American ideals of power, sex, and immortability… It appears that American vampires are perfectly suited to this culture. They reflect those values which many Americans hold dear. They like to succeed. They always get the girl."

Long before this pop cultural appeal, the vampire was a side effect of old mythological beliefs revolving around blood. This most prominent of all bodily juices was regarded to be the fuel of life by Antiquity, be it in the Old Testament which banned blood from human consumption or the *Odyssey* where the sorceress Kirke recommends the slaughter of sheep in order to conjure the specters of the dead and 'recharge their batteries'. The vampire is thus a crown witness for all taboos revolving around blood. They remind us of everything that goes under the skin and matters of life and death: such as blood brethren, blood rituals, blood sacrifices, blood sports, or simply, menstruation. Blood is an epitome for what the French psychoanalyst and philosopher Julia Kristeva calls "abjection" and close to the concept of the "sublime" as formulated by Trinity College Dublin philosopher Edmund Burke in the 18th century: an ambivalent mixture of being appealing and appalling, overwhelmingly disgusting and fascinating, a substance that is appreciated in religious liturgies of all kinds. Because 'the blood is the life' we won't stop fantasising about it, individually and as a cultural collective. This is what the arts and humanities' contributions to BLOOD address, be it in the video by the famous Austrian performance artist Hermann Nitsch documenting his attempts to establish an artistic religious cult revolving around blood and sacrifice, Peter Arnd's exhibits dealing with fairy tales and racism, Maria Parson's and Paul Cronly's video on menstruation, and my own little still life regarding vampires and (pop) culture. Enjoy a bite.

Jens Hauser
Jens Hauser is a Paris-based art curator, writer, cultural journalist and filmmaker focusing on the interactions between art and technology, biotechnology, and trans-genre and contextual aesthetics. He guest lectures at universities and art academies internationally. His current research at the Institute for Media Studies at Ruhr University Bochum in Germany is concerned with biomediality.

Shaun McCann
Shaun McCann is an Irish haematologist who established the National Stem Cell Transplant unit in 1984 and carried out the first successful stem cell transplant. Shaun was Professor of Haematology and Academic medicine in St James' Hospital and Trinity College Dublin until his retirement.

Luke O'Neill
Irish immunologist Luke O'Neill was appointed to the Chair of Biochemistry at Trinity College Dublin in 2008, where he leads the Inflammation Research Group. He is also Academic Director of the Trinity Biomedical Sciences Institute. His research lies in the area of the molecular basis to inflammatory diseases.

Clemens Ruthner
Dr Clemens Ruthner was born and studied in Vienna. He is a literary and cultural scholar who has lived and taught in Austria, Hungary, Belgium, Canada and Bosnia-Herzegovina. Since 2008 he has been Assistant Professor of German and European Studies at Trinity College Dublin. His research interests include otherness and cultural teratology, sexuality studies and cultural theory.

Lynn Scarff
Lynn Scarff began working with Science Gallery in 2006 with Founding Director Michael John Gorman, and in that time she has been involved in all aspects of the development of the organisation; from the programmes delivered to the fundraising and marketing strategy behind them. Now Director of Science Gallery Dublin, Lynn is responsible for devising compelling programmes that engage diverse audiences on themes that cross boundaries and disciplines.

Woof Woof & Lover
Franko B would like to thank the paper maker, the wool and cotton seller, the paper cutter, the framer, and his lover for making this work possible.

Blood Vessels
The development of this work has been kindly supported by Raymond and Terry Tribe, Chemglassware Ltd, Science Gallery, the Wellcome Collection and Russell Scientific Instruments Ltd.

May the Horse Live in Me !
This performance has been co-produced by Art Orienté Objet; Gallery Kapelika, Slovenia; Espace d'art Rurart, France; and EESI Poitiers, France.

Pulse Index
Conroy Badger is responsible for the programming, while Guillaume Tremblay, Stephan Schulz, Karine Charbonneau and Pierre Fournier handled antimodular production. Carroll / Fletcher (London), bitforms gallery (NYC) and OMR Gallery (Mexico) represent the artist.

STAINS™
Chella Quint would like to thank: The Society for Menstrual Cycle Research, TEDxSheffield, Pecha Kucha Sheffield, The Sex Education Forum, Leeds University Union Feminist Society, Sheffield Hallam University, Access Space, Science Showoff, Sheffield Makers and Hackers, Bluestockings Books, Chris Bobel and Liz Kissling, Chris and Rosie Dymond, Geraldine Byrne, Cara Holmes, Helen Cameron, Laura Veni, Sarah Thomasin, Annette Quint, Adventures in Menstruating readers, fans, punks, zinesters, and all of the eager and willing *STAINS™* spokesmodels who have posted and continue to post photos to #periodpositive.

Stem Cell Transplantation
Shaun McCann would like to thank James Cogan, and all the staff in St James' Hospital and Trinity College Dublin who were involved in this exciting and life-saving venture. Human placenta provided courtesy of a donor at the Coombe Women and Infant's University Hospital in Dublin.

OpenWindow—Remote Presence
This work is undertaken in collaboration with Double Robotics, St James Hospital in Dublin, and with the support of the Bone Marrow for Leukaemia Trust.

Science Gallery Dublin
Science Gallery Dublin thanks: the Irish Blood Transfusion Service for their support in producing BLOOD, in particular Training and Education Officer Barry Doyle and Donor Recognition Director Stephen Cousins; Accuscience, Declan Keogh and Carl Ryan for providing the material needed for blood grouping; Trinity Biomedical Science Institute and Noreen Boyle, the Senior Technical Officer of the Physiology department, for their continued support; and the staff of Science Gallery Dublin whose blood literally went into creating this exhibition.

Exhibition Design
Rob Warren & Ruža Leko

Exhibition Production
THEWOODSHED

Exhibition Build
East Joinery

Graphic Design
Ruža Leko

Graphic Design intern
Carmel O'Brien

Publication print
Plus Print

What is Science Gallery?

In 2008, a car park in a forgotten corner of Dublin was transformed into a living experiment that would bridge art and science, unleashing their combined creative potential. A groundbreaking initiative, Science Gallery Dublin is a porous membrane between the university and the city where art and science collide. Since opening in 2008, over 1.7 million visitors to Science Gallery Dublin have experienced 32 unique exhibitions — ranging from living art experiments to materials science and from the future of the human race to the future of play. Science Gallery Dublin develops an ever-changing programme of exhibitions and events fuelled by the expertise of scientists, researchers, students, artists, designers, inventors, creative thinkers and entrepreneurs. Science Gallery focuses on providing programmes and experiences that allow visitors to participate and facilitate social connections, always providing an element of surprise.

About the Global Science Gallery Network

Science Gallery is an award-winning international initiative pioneered by Trinity College Dublin that delivers a dynamic new model for engaging 15–25 year olds with science. Through a cutting-edge programme of exhibitions and experiences that ignite creativity and discovery where science and art collide, Science Gallery encourages young people to learn through their interests. In 2012, the Global Science Gallery Network was launched with the support of Google.org. This initiative aims to establish Science Gallery locations in eight cities around the world by 2020.

Through the generous support of our partners, Science Gallery develops and brings ground-breaking exhibitions to Dublin. Being a partner allows companies to enjoy year-round association with Science Gallery and its work to ignite passion and creativity in the fields of science, technology, engineering, art and maths. Join us in inspiring the next generation of innovators, building a fresh start for Ireland's future.

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