

THE WORLD OF BONE,
CORNEA, AND SKIN
DONATION AND
TRANSPLANTATION

One Life...Many Gifts is a curriculum resource to educate senior secondary school students about the vital importance of organ and tissue donation and transplantation. It brings to life the drama, generosity and the life-saving promise of donation and transplantation.

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You Can't Even Imagine the Pain:

Burn Patients Find New Hope in Sunnybrook's Trauma Centre

Lots of people have their skin tattooed with various sayings and images that have personal meaning. Even television series have now been produced dedicated to the art of tattooing. Our skin receives a lot of attention in terms of lotions, creams, oils, masks, facelifts and other treatments. But skin doesn't cover our bodies just to make us look handsome or pretty. Skin has a job to do: it regulates our body's internal temperature. It maintains the balance of water in our bodies, offers protection against radiation from the sun, and tries to stand guard against trauma and infections.

Our skin is a constant sentinel, a personal sergeant-at-arms against bacterial intruders; the skin does its best to guard against a host of skin diseases. It also provides a barrier against trauma, skin abscesses, violent assaults and various kinds of burns. That is a big task for an organ that is so thin; our skin is just 4 to 5 millimetres thick. What our skin lacks in thickness, it gains in size. If we could slip out of our skin and lay it like a carpet on the floor, it would cover 22 square feet (two square metres).

If we were to list all the kinds of pain a person can experience, probably nothing is more excruciating than a burn injury. Burns sear and the skin sizzles. We have all had the experience of touching a stove element by accident. We pull back our fingers in a nanosecond, recoiling from the momentary blistering. Those burns are manageable; within a few days, the skin calms down and we continue with our lives. Many people are not as fortunate; they experience serious scalding from pots of boiling water or from tipped frying pans. Electrical injuries are very common, not only from home renovation projects but also in situations

where hydro workers accidentally touch live wires and get electrical burns. Improperly contained chemicals often cause chemical fires. There are also the burns people experience when a house or apartment building goes up in flames. We can, quite literally, die from the shock of third-degree burns.

If you were asked to donate skin, you would probably wonder how that would be done and how it could be used to help someone else.

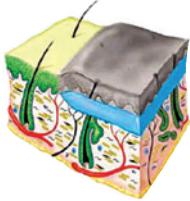
People are burned every day; they suffer first-, second- and third-degree burns.

Each category of burn highlights the degree of damage done to the skin. A first-degree burn is the least problematic assault on the skin; a third-degree burn covering a significant part of the body may lead to a person's death. Even if a burn victim survives, doctors usually have to place a patient in a medical coma to allay some of the pain. In order to treat a patient, skin grafts from a deceased donor (allograft skin) are required.

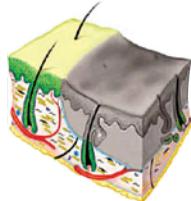
Unfortunately, in Canada, much of the allograft skin used on patients has to be ordered from outside of the country. It is not that people would resist donating skin tissue after their deaths; very few people know about the need. Even among those people who have heard about skin donation, many have misconceptions about how it is recovered and have a limited understanding of how it can help someone in need.

Any person who has died between the ages of 14 and 75 can be a skin donor. It is critical that a burn victim receive

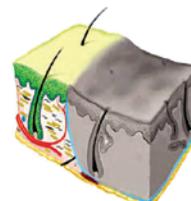
FIRST DEGREE BURN
SUPERFICIAL BURN



SECOND DEGREE BURN
PARTIAL THICKNESS BURN



THIRD DEGREE BURN
FULL THICKNESS BURN



A burn victim with his wife and child



Dr. Manuel Gomez

donated allograft skin to cover affected areas while he or she tries to heal and create a new cover for the body. Donated allograft skin also helps a patient avoid infection and a loss of fluid while he or she is growing new skin; usually, new skin growth appears within two to three weeks. While the burn victim is kept under sedation, donated allograft skin is laid on the affected areas. No skin is taken from a donor's face or neck. It is only taken from areas that would not affect a family's wish to have an open casket funeral. The skin that is used on a patient is extremely thin, about the thickness of a sheet of waxed paper. Family and friends visiting a deceased person would never know their loved one had donated tissue.

If you decide to register your donation wishes with OHIP discuss the issue with your family. You could very well save one or more lives. Sometimes, the donated allograft skin is used on many patients. In severe cases, donor allograft skin may be dedicated to just one person in the burn centre. You can, literally, save a life.

One patient arrived in Sunnybrook Heath Sciences Centre with burns on 70% of his body. During the three months he was housed in the burn unit, he had 15 different surgeries, followed by an additional four months of in-patient rehabilitation. Having struggled for half a year with painful treatments, the patient had to undergo two additional surgeries, and then dedicated himself to two more years of treatment in an outpatient clinic. Today, he has returned to a world outside of the hospital, as a husband and father. It took superhuman strength of character, together with phenomenal physical and emotional stamina, to undergo the almost continuous pain of serial surgeries.

Not surprisingly, doctors become very attached to their heroic charges. Dr. Karen Cross, one patient's plastic surgeon, did not show any pictures of her patient's progress in a seminar conducted at the Trillium Gift of Life Network. Instead, she concluded her lecture with a single image, projected against a wall in the agency's boardroom. Cross's patient was sitting with his family, both hands raised in triumph. It was an extremely emotional moment for Cross; she had been at her patient's side day in, day out, for a very long time. Cross stood quietly for a moment, looking at the image on the wall. The highly trained surgeon blinked back some almost-present tears, swallowed once and then reminded everyone in the room, "We are at an absolutely critical point in looking after burn patients. The Ontario Professional Fire Fighters help us enormously, particularly with the costs of the Skin Bank itself, but we are always facing a situation where the need for skin allografts exceeds the supply available to us."

There is absolutely no question that Dr. Karen Cross and Dr. Manuel Gomez, the team leader of the Skin Bank and research associate, dedicate themselves completely to the Ross Tilley Burn Centre. There are other burn centres in the province, all of them committed to burn injuries. You can help them transform hundreds of lives by registering to donate, by discussing the burn centres' work with your family and by spreading the word about the need for additional skin donors to everyone you know. Few of us have an opportunity to make a radical difference in the world. You can. Please do.

Over to You...

★ A. JOB PROFILE

All comprehensive burn programs offer exceptional patient care and a full range of services – including reconstructive surgery and rehabilitation. A burn-care team includes plastic surgeons, physiotherapists, occupational therapists, dietitians, pharmacists, social workers and chaplains. Choose one of the professions that appeals to you and prepare a short job profile, a description of the key responsibilities you would assume as a professional involved with a patient's recuperation at the Ross Tilley Burn Centre or any other facility that provides care for burn patients. Share your job profile notes with the class.

★ B. RESEARCH AND PRESENTATION

All of the tabloids and the weekly faux news magazines are filled with the latest stories of people who are having tummy tucks, botox injections, face and eyebrow lifts, liposuction and other cosmetic procedures. Not all plastic surgeons are involved with the enhancement of people's thighs, chins, breasts, noses and abdomens. Many reconstructive surgeons dedicate their lives to helping burn victims regain a sense of normalcy. Others assist children who have facial deformities, large tumours and misaligned jawbones. For people whose quality of life is seriously compromised by an assortment of medical problems, plastic surgery may offer a form of therapeutic personal relief or healing.

Investigate the non-cosmetic side of plastic surgery. Choose one or two procedures that make a significant difference to a child or adult who has congenital deformities, or acquired medical problems arising from bicycle, motorcycle, snowboard and roller blade mishaps, or injuries sustained in car accidents and other unexpected injuries. Present your findings to the class.

❖ C. INVESTIGATION

We have all seen documentaries in which firefighters risk their own lives to save people who are overcome by smoke or unable to find their own way out of a burning building.

What is not as well known are the number of charities that firefighters support, including the ongoing financial well-being of a critically important burn unit in Ontario, the Ross Tilley Burn Centre.

i) Working with a partner, imagine you are a firefighter who has seen the devastating effects of fire on the human body. Brainstorm the points you would raise if you were making a public appeal to people to consider the need for skin donation.

ii) As a research project, contact the Ontario Professional Fire Fighters Association (1-905-681-7111 or www.opffa.org). Find out what they do in addition to their daily responsibilities. Ask how you might assist with some of their charity work; in Ontario, each student must dedicate 40 hours of volunteer time in a community setting in order to graduate. You may discover a career that interests you; at the very least, you will find a venue in which you can complete your community service assignment.

Since there are so many associations in the province, a visit to any one of the fire halls will allow you the opportunity to explore ways in which students in your school can partner with firefighters to get the message out about the importance of organ and tissue donation.



THE ARTS



CANADIAN & WORLD STUDIES



ENGLISH



GUIDANCE & CAREER EDUCATION



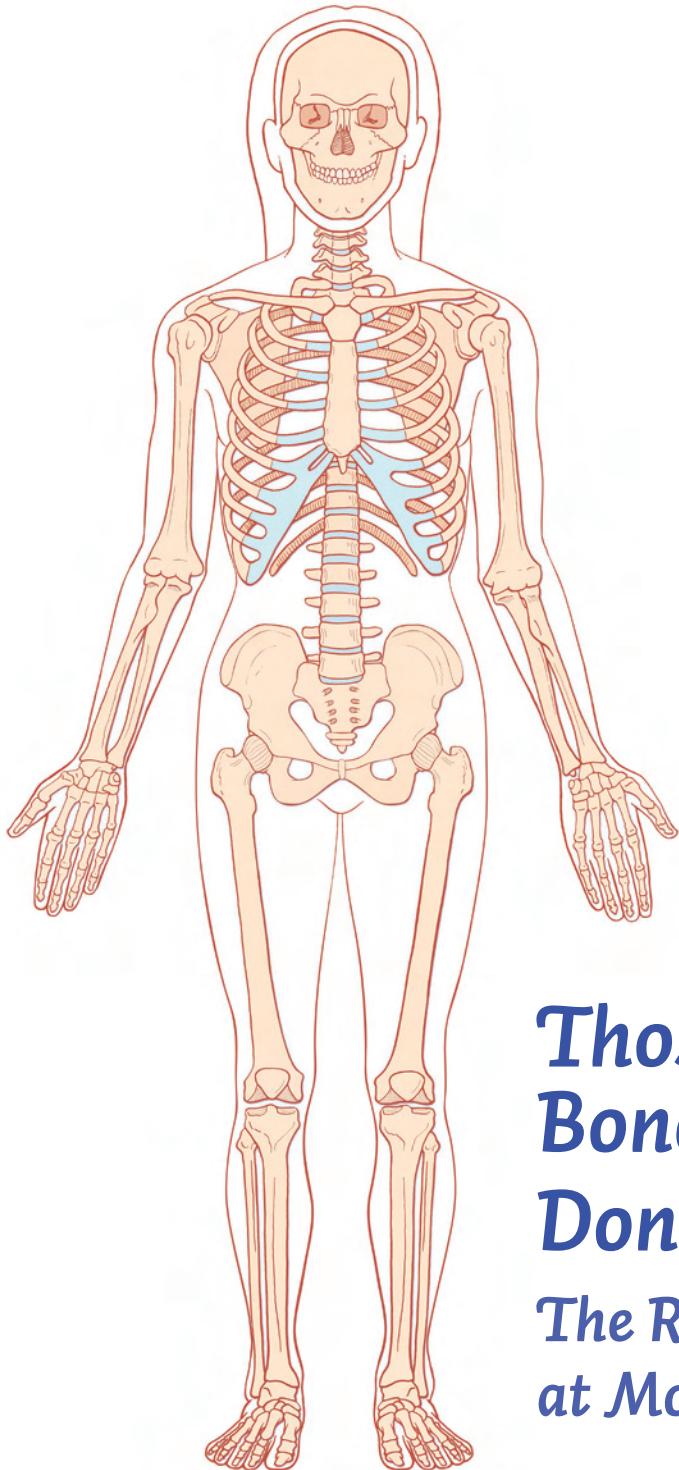
HEALTH & PHYSICAL EDUCATION



SCIENCE



SOCIAL SCIENCES & HUMANITIES



Those Bones, Those Bones, Those Long Bones Don't Forget the Tissue: The Rubinoff Bone and Tissue Bank at Mount Sinai Hospital, Toronto

Put your hands on your pelvic bones. Now, touch your Achilles tendon. Next, find your femur bones, your deltoid muscles, patella tendon, humerus and ulna. We are not finished yet; can you place your hands on your two fibula bones, on your biceps and on your gluteus maximus? How are you doing in the first Canadian Find Those Bones, Tissues and Muscles challenge? We don't usually think about our bones and tissues, or haven't done since we sang the early childhood song about all of them.

As an elementary school student, you knew that the hip bone was connected to the thigh bone and the thigh bone was connected to the leg bone and the leg bone was connected to the ankle bone and all 26 of those ankle and foot bones would rather that you stood on your feet, and not trip or fall. Otherwise, those bones would get

sprained or broken. Usually, there is just no fixing those toe and foot bones; you have to wait until they heal on their own. Pain–full.

In total, we have 206 bones in our bodies. Some bones can get medical help; orthopaedic surgeons can work on knees and hips, on backbones and collarbones, and – the perennial favourites among children and teens – broken arms and legs.

If you are young enough, it may seem fun to have a cast on one appendage or another, particularly now that hospitals have coloured casts. Even a white cast will do; there is more room on it for autographs.

Broken bones become less and less fun the older you get. Usually, you need crutches to support your body if a leg is shattered; you always need physiotherapy after breaking an arm or a hip, and healed bones are never quite the same. They are particularly prone to arthritis, and they often ache for no apparent reason after a broken bone has healed.

In Ontario, there are three bone and tissue banks – Kingston General Hospital Bone Bank, National Capital Region Bone Bank in Ottawa, and the Rubinoff Bone and Tissue Bank at Mount Sinai Hospital in Toronto. Their mission is to provide bones and tissues for patients who require a transplant. There are lots of reasons someone would need a transplant – to relieve pain, restore joint function, prevent amputation, treat periodontal disease, reconstruct a person’s bladder and replace bone and tissue that have been destroyed by cancer.

At the Rubinoff Bone and Tissue Bank, all news is good news. If someone chooses to donate his or her tissues, up to **75** people can be helped from a single tissue donor. With bones, the news is almost as good: more than **40** patients can be helped from a single donor.

It is a rare day that we want to sit down and think about all the things that could go wrong with our bodies. We usually have problems enough, without spending any free time on possible future catastrophes. Life has a way of making us stop, just when we have decided we don’t want to hear any bad news. Bones and tissues are often involved in our unexpected ailments and injuries: we wake up and discover arthritis has set in; we fracture a hip in a fall; a doctor discovers a bone cyst in a routine medical exam. Bones are crushed in car or industrial accidents; knee ligaments are torn from running or playing various sports.

There are also congenital bone disorders, malignant bone tumours and dental disorders that require assistance from the Bone and Tissue bank. That is a long list of problems; a tiny, dedicated, very hard-working staff headed by Medical Director Dr. David Howarth makes sure that all donor bone and tissue is one hundred percent safe for transplantation. He would never release any bone or tissue that he would not want transplanted into his own body or that of his family. Given that level of meticulous checking and cross-checking, it is no surprise that the Rubinoff Centre

was the first bank in Canada to be recognized and accredited by the American Association of Tissue Banks. Established in 1972, the founding surgeon, Dr. Allan Gross, developed several surgical procedures using bone grafts to assist surgical patients; now, he teaches his pioneering procedures all over the world.

There is a lot of publicity surrounding organ transplants, particularly in medical television series. A patient rolls through the hospital doors on a stretcher, and – right after the commercial – he or she is in the OR, getting a new heart. In real life, you are ten times more likely to have a tissue transplant than an organ transplant.

Last year, more than **700** patients across Ontario received donated human bones, tendons, cartilage and fascia from the Rubinoff Bone and Tissue Bank. More than **100** of the operations were undertaken on children. Every year, thousands of bones and tissues are distributed across Canada.

Here's the hard part: since 2005, the number of bone and tissue donors has dropped dramatically. During the same time frame, the need for donations has escalated enormously. The discrepancy between the need for tissue and the number of donors continues to widen. It is so serious that more than 90% of needed tissues now come from sources outside of Ontario. But here's the good news: you can help to make a difference.

Today, you and a group of your friends can talk about being donors with your families, and participate by registering your intention with OHIP.

There is more good news: the ideal ages for donating bone and tissue are between 15 and 65. You are in that group! For non-structural tissue, the age criteria extend to 75 plus or minus five years. That means both your parents and grandparents can register as donors.

Donation probably sounds a little abstract, somewhat removed from your day-to-day life. Take a peek at some of the successes recorded within the Mount Sinai Bone and Tissue Bank. One patient fractured her hip; after an operation that utilized proximal femur tissue, the **81-year-old** woman has been able to return to her job – training dogs. A **12-year-old** quadriplegic with cerebral palsy and scoliosis can now sit upright in her chair, an important change in her quality of life. An **88-year-old** woman who had to repair a fracture from a previous hip surgery (using humerus tissue) can now walk without any discomfort or pain. Both the patient and her family are ecstatic with the results. A **42-year-old** man who injured his knee at work was given a fresh knee allograft and is now well on his way to a full recovery. In the last year, patients ranging from the tiniest baby to a 96-year-old adult – patients recovering from anything from ruptured tendons to major spinal injuries – have all been helped because of the work of the bone and tissue banks in Ontario.

Over to You...

A. SHARE INTERESTING FACTS

You already know that our skeleton holds us up and keeps us together. It also protects our various internal organs, including the brain, heart, lungs, kidneys, liver, spleen and everything else that is housed within our bodies.

Choose a book that describes and discusses the parts and the functions of our skeleton and our skeletal muscles. In the book *How The Incredible Human Body Works*, you will find four fold-out pages that examine bone structure.

When you have had a chance to read about our bony skeleton and our skeletal muscles, make a poster of a skeleton to teach elementary school children about bones. On your poster, label the bones you think are most

important and include in your poster design ten interesting facts about our bones, tissues and muscles. When you are finished, compare your poster with others to see if they chose the same or different bones and facts. Revise your poster and then try it out with an elementary school student you know.

♣ B. LETTER TO THE EDITOR

Many patients whose lives are transformed by donated bones and tissues send notes to Mount Sinai after their surgeries. Read the thank you letter the hospital received from bone recipient Bonnie Simonato, and then reread what you have learned about bone and tissue banks. Working with a partner, write a letter to the editor of your local newspaper, explaining why it is so important for people to be bone and tissue donors.



THE ARTS



CANADIAN & WORLD STUDIES



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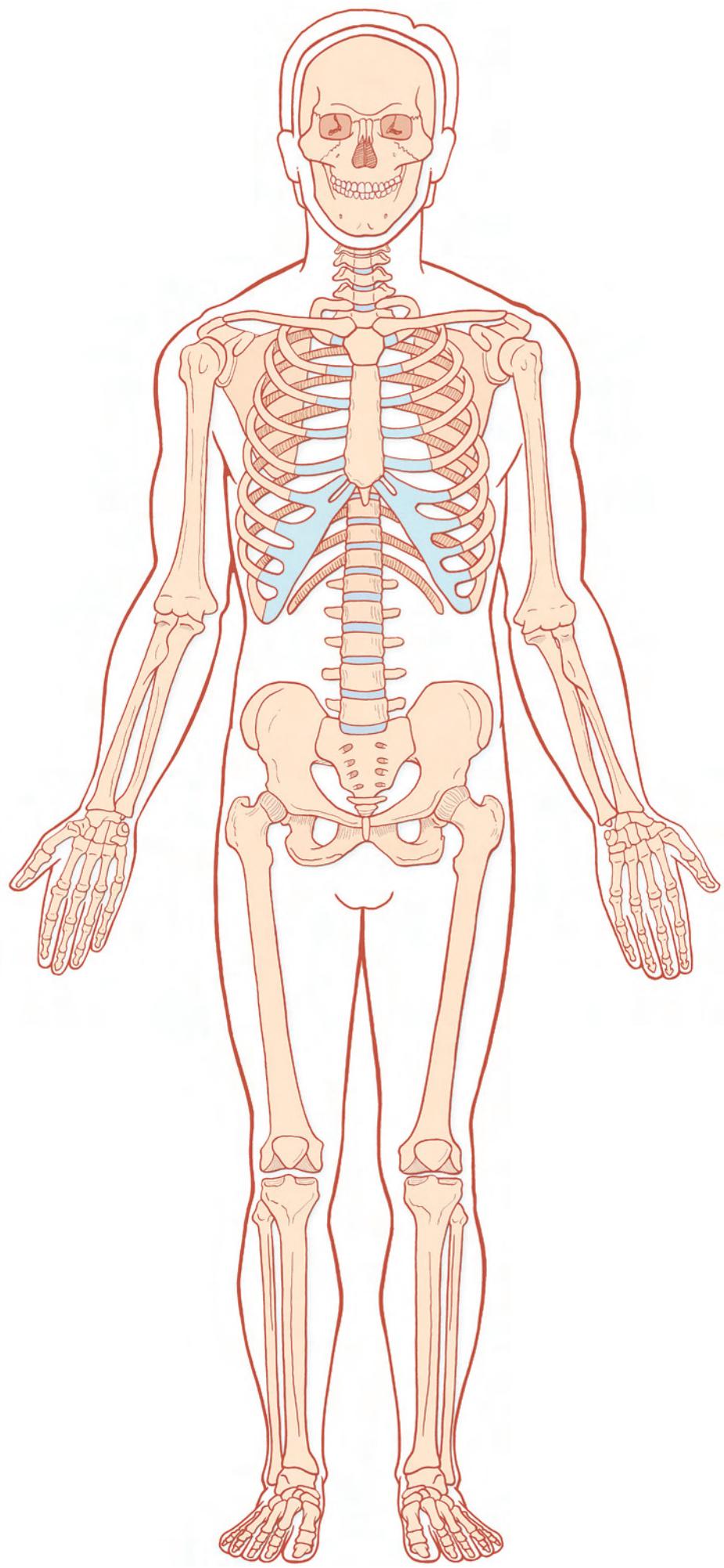
HEALTH & PHYSICAL EDUCATION



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SOCIAL SCIENCES & HUMANITIES



Dear Staff at the Rubinoff Bone and Tissue Bank:

What an extraordinary journey I have been on since I fell on an icy playground while out on yard duty at my school where I was the Teacher-Librarian. That day my busy life as a wife, mother, educator, and volunteer came to an abrupt stop! With that one slip on the ice my femur smashed into my tibia plateau. During my first surgery my tibia plateau was rebuilt using bone shaved from my iliac crest. My rebuilt tibia plateau collapsed following six months of no weight bearing on that leg. Thus, since my first surgery was unsuccessful, I was very keen to get a 2nd medical opinion. After seeing four other orthopaedic surgeons in southern Ontario, I was finally placed on the Bone Transplant List. Fortunately, I was only on the list for three months. My pager went off one Sunday morning while I was in a wheelchair in our church to signal that a donor match had been found. Isn't that, indeed, a special place for my pager to ring? I received a rare bone transplant at Mount Sinai Hospital in Toronto, to correct my injuries.

Following the bone transplant, I was confined to a hospital bed on the second floor of my home for more than 30 months believing that my body would

not reject my young donor's fresh bone and cartilage. I believed that I would walk again. In addition, it took me another eight months of physiotherapy and water therapy to regain my mobility.

While confined to bed, I wrote and self-published three books. I have retired from teaching and now conduct seminars for businesses, schools, service clubs, women's groups, and churches. I will be grateful forever to that anonymous young woman who signed her Donor Card to permit this rare bone transplant to proceed. I am also extremely grateful to my donor's family for honouring their daughter's wish to be an organ donor which allowed me to receive this extra-ordinary gift! My young donor's dreams were snuffed out so early in life, but my dream to walk again came true. Every opportunity I get I encourage people to sign their donor card and, more importantly, to discuss their wishes with their immediate family.

Sincerely,

Bonnie E. Simonato

First They Are Blind, And Then They Can See...

The Eye Bank Of Canada

"For me, the greatest satisfaction in my job is to know that we can provide corneas to newborn babies with Peter's Anomaly, a disease that causes blindness in infants. Think about it: a baby is born and he or she cannot see its mother or father. There is absolutely no medical treatment for the condition except a transplant. The Eye Bank of Canada steps up, and gives corneas for the baby's transplantation. One of the 21 certified corneal surgeons across Ontario undertakes the life-changing procedure and – immediately – the infant can see its parents for the very first time. Knowing that I am part of that miracle makes my job a total joy."

Linda Sharpen is the Director of The Eye Bank of Canada, Ontario Division. First founded by the Canadian National Institute for the Blind, the University of Toronto and the Canadian Ophthalmology Society in 1952, the Bank serves the entire province. Anyone who wants to donate eyes or any patient who needs a cornea transplant works through the Eye Bank. From its central location in Toronto, Sharpen distributes more than 1,500 donated corneas each year. In her experience, Sharpen finds that donors do not just come from larger city hospitals, but a significant number come from small communities in Ontario. Any size of hospital can undertake eye recovery; only the larger hospitals have the staff and equipment to retrieve organs.

Although it is clear that Sharpen is running as fast as she can, and driving just as quickly to get the word out about The Eye Bank, the waiting list is still very long. It can take three years on a waiting list before a cornea becomes available. People who could move from blindness into a sighted world must wait. For adults who are hoping to return to jobs that depend on seeing clearly, the waiting seems endless. Those

who must wait for donated corneas include babies and children and patients who have just experienced major trauma from an accident. The hands of eye surgeons are tied; there are typically only two corneas available for transplantation each week.

Last year, the Eye Bank had to cancel 40 elective surgeries, transplants that were already booked, with patients who had already been notified – all because there were no donors. Eye tissue can only be kept for eight to ten days; after that time, it has to be used for research and training because there is no capacity to extend its viability and the tissues are too delicate to allow for freezing.

Sharpen wants the situation to change. Obviously. She wants adolescents to register to donate and to speak with their families about their donation wishes because it is next of kin who provide final consent for a patient to donate. If your loved ones do not know that you want to donate, then they may not know how to act on your behalf.

Changing a person's life, moving him or her from a world of darkness into a universe filled with colour and light, is simple. Easy. Fast. The recipient uses the gift of vision for an entire lifetime.

If you are interested in knowing more about the work of the Eye Bank of Canada, drop in on their website: www.eyebank.utoronto.ca You can also phone the Bank at (416) 978-7355 if you are preparing an essay or a speech for your school or for people in your broader community. Get the word out. Help increase the number of donors.

One of Canada's most celebrated artists is a cornea transplant recipient.

Joe Fleming

Joe Fleming is a Canadian artist and a professor at the Toronto School of Art. When Joe was nine, he was struck with a piece of wire, part of a coat hanger that was being used as a mobile holder, in his grade school. The classroom was out of control. Students were throwing things everywhere. The flying wire went to the dead centre of Fleming's eye. After that, there is very little that Joe remembers. He can recall an ambulance, an emergency room and a recovery room. Everything else is a blur.

In theory, his operation was designed to restore his sight, but very little was accomplished in the initial surgery. His right eye compensated for the injured eye; Fleming just carried on with his education and his life.

Years later, when Fleming was in his mid-twenties, he had a cornea and lens transplant. Joe remembers the second procedure a little more vividly. He could feel the different layers of the eye – the cornea, the lens, the pupil. He remembers the doctor laying a tiny, translucent layer on his eye. Unlike laser surgery, where improved vision is almost immediate, a cornea transplant requires a little more time to reveal its success because the brain has to readjust to its new circumstance of having two functional eyes.

For many of us, a cornea transplant would be undertaken, and we would return to our ordinary lives. For Fleming, an artist, a person whose professional life is completely dependent on the particular way he sees images, the cornea repair had many consequences. Without knowing exactly why, Fleming started working on plexiglass. In 2003 he created a large series of paintings on translucent materials. He worked with plexiglas and wood, dropping pours of paint over cartoon characters outlined in black. Light travelled through the plexiglass and interacted with the various layers of the artwork. Now, Fleming realizes that there has always been diffusion in his work, a blurring. As he reflects on the techniques he employed in his Frolic series, Fleming is now convinced that his choice of materials is related to his way of seeing. In the past, he tried to ignore the impact of his early childhood trauma in his work.

Now, he accepts it: "It's me. It's the way I see."



miss guided, 2003
acrylic on plexiglas
120 x 120 cm



Take a look at one of Joe Fleming's works, **miss guided**. It is part of his *Frolic* series from an exhibition in Singapore. In his catalogue, he notes the meaning of the word frolic and invites the viewer "to play and move about cheerfully, excitedly or energetically."

Over
to
You...

You have had an opportunity to read about the work of the Eye Bank of Canada, and you have also seen the way in which donated corneas can transform a person's life. Who knows if Joe Fleming could have found a way to become an artist if he had been left with sight in only one eye after his childhood accident? We are left with speculation in the absence of certain knowledge. What we can know is that Fleming's paintings are now part of the Canadian High Commission and the Australian High Commission collections. His work is also featured in the Museum of Civilization and all across the world – in Singapore, Jakarta, Hong Kong, Miami and Toronto. Clearly, one donor's gift makes a very big difference in the world of art.

A. RESEARCH INFORMATION FOR WRITING A SPEECH

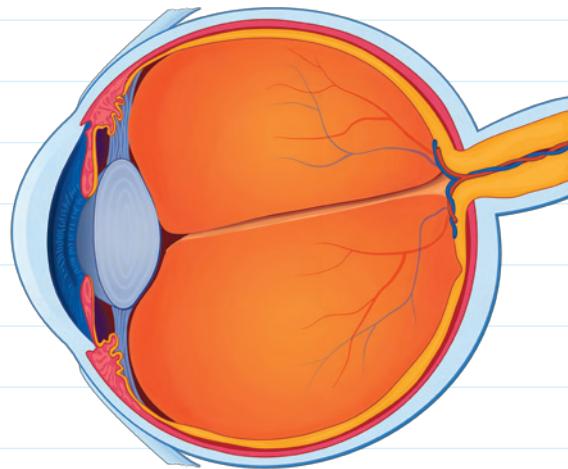
Working with a partner, research the information you need to deliver a speech that will convince people to donate their corneas as part of their organ donation commitment. Obviously, as part of your fact-finding, you need to read about the eyes and how they work. You also need to complete the following four tasks before you are fully prepared to craft your speech. In public speaking, having a solid grasp of the background information that informs your talk is imperative.

TASK A

Start your research here with a brief description of our eyes.

Our eyes are complex organs for detecting and managing light. They work like an old-fashioned film camera. Light enters through the cornea – a thin, transparent sheet of tissue at the front of the eyeball. The cornea slightly bends the incoming light as it passes through on its way to a small opening, the pupil.

A healthy cornea is clear, smooth and regular in shape. Not only does the cornea allow light to pass into the eye, but it also acts as a lens to help focus light on the retina which makes images clear and sharp. The cornea is lubricated by tears and covered with a tissue that protects against dust, hairs and other objects that could hurt the eye.



TASK B

Continue your research by borrowing a book on the human body, one that has a well-illustrated chapter on the senses. There will be a four-colour illustration of the human eye.

Draw an eye, labelling all the parts.

Over to You...

Write a paragraph outlining the function of the following – the optic nerve, the optic disk, the eyeball, ciliary body, the iris, the pupil, the lens, the sclera, the choroid, rods and cones, vitreous humour and the retina.

Although there are many possible dangers to the eye, we rarely think about eye problems. If the cornea is damaged, it can become scarred, distorted or swollen. Its smoothness and clarity are lost. The damage can lead to a distortion of light, causing glare and seriously reduced vision.

The most common reasons for requiring a cornea transplant are accidental injuries, a herpes virus infection of the eye, hereditary or congenital clouding, or severe bacterial infection. Additionally, as people age, there is often a clouding over and loss of transparency in the cornea. The smooth, rounded shape of the cornea sometimes changes, preventing light from being accurately focused into the eye. If that happens, a transplant is needed.

A cornea transplant is a surgical procedure in which a healthy cornea, taken from a deceased donor, replaces a damaged cornea. Since the cornea usually has no blood supply, there is less chance of rejection, so cornea transplants do not require tissue matching as is the case with other organs.

Unlike some transplant procedures, almost all cornea transplants are both safe and successful. More than 100 years ago, Dr. Edward Zim restored the sight of a man whose corneas had been burned in a chemical accident. The transplant was a success, and it allowed the patient to experience good vision for the rest of his life. Today, cornea transplantation has over a 90% success rate.

TASK C

Take a few minutes to explore your own world without the capacity to see clearly, or at all. For people with damaged corneas, a world of shadows and vague shapes is more than a fictional possibility. It is a daily reality. Your other senses have to be your eyes; hands can touch, ears can hear, your nose can smell; your tongue can provide you with taste tests in the absence of signals from your eyes. Place your arm into the crook of your partner's arm and walk blindfolded for 15 minutes in the school hall. You will notice how dramatically different the world becomes when you cannot see people and objects. The short experiment will give you a small insight into a world without vision, and suggest some possibilities for your speech. You could remain blind for a day if you need a more complete understanding of a sightless world.



THE ARTS



CANADIAN & WORLD STUDIES



ENGLISH



GUIDANCE & CAREER EDUCATION



HEALTH & PHYSICAL EDUCATION



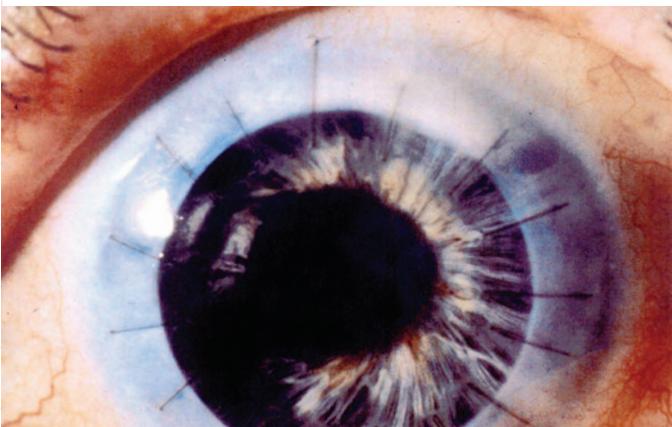
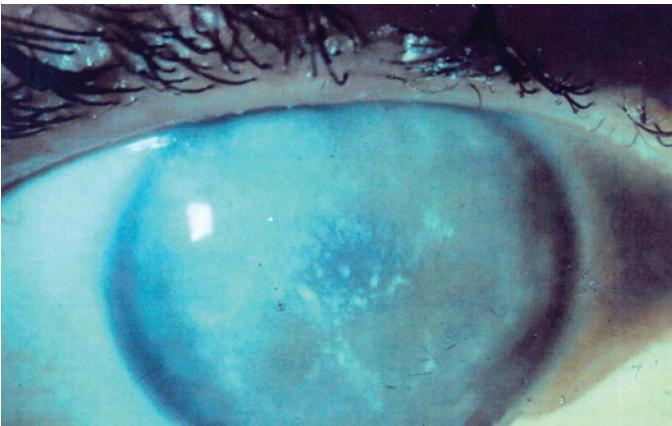
SCIENCE



SOCIAL SCIENCES & HUMANITIES

TASK D

Take a look at the eye of a 72-year-old woman with corneal dystrophy. Then, examine her eye after a cornea transplant. The two photographs are images of the same eye, one before and the other after her operation. Now, there is a whole new world for her to inhabit.



(Information on the cornea has been taken from two texts: *Transforming Lives* and *Human Body: A Visual Guide*. Complete bibliographic information is included in the annotated bibliography.)

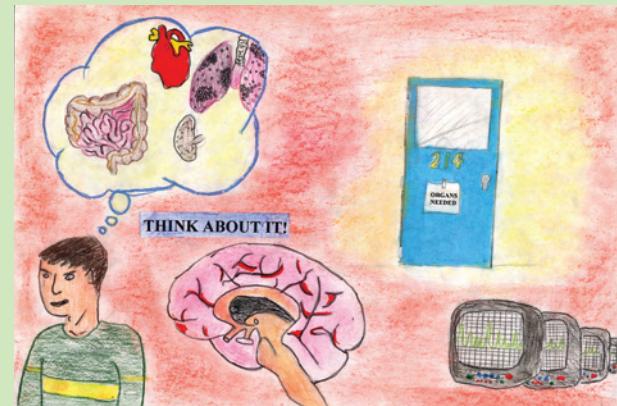
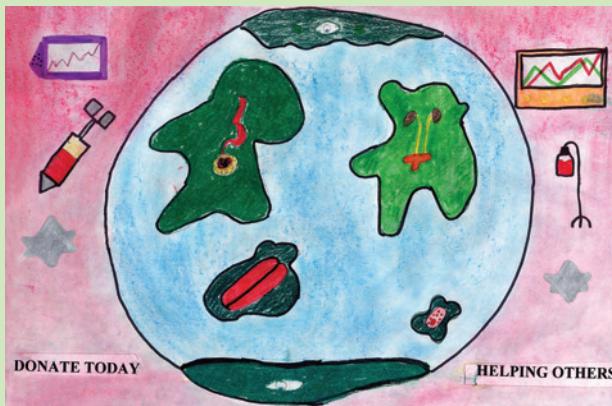
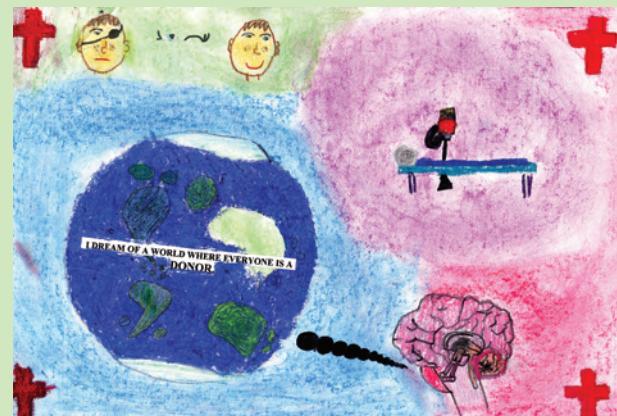
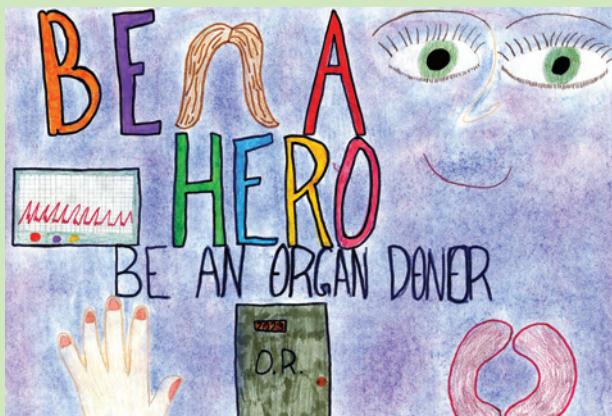
B. WRITE A SPEECH *

Working with a partner, write a speech in which you attempt to convince people to donate their eyes to the Eye Bank of Canada.

When you are happy with what you have written, try it out on your classmates. As they are listening to the argument you and your partner have prepared, ask them to decide if they are convinced by your presentation. Based on the information you share, would they donate their corneas?

When you are finished, those listening should enter a number on a ten-point scale: a nine or ten rating means that they are completely convinced and would donate if the occasion arose; numbers in the 6-8 range suggest that additional information may be required; and anything under 5 points to an unsuccessful campaign.

Over to You...



C. CREATE INSPIRATIONAL POSTERS ☺◎

Linda Sharpen, the Director of the Eye Bank of Canada, Ontario Division, travels all over the province delivering speeches about the need for cornea donation. In one small northern Ontario town, students decided that they would not only try to get the word out into the community by speaking with people, but they also decided to create posters that could be displayed in the school and in store windows in the town. Four of the posters are featured above. Choose the one that speaks to you most personally, and then work with a small group of classmates to create additional posters. Send your artwork to the Eye Bank of Canada, Ontario Division; you may well see your artistic efforts translated into the Bank's future advocacy campaigns.



THE ARTS



CANADIAN & WORLD STUDIES



ENGLISH



GUIDANCE & CAREER EDUCATION



HEALTH & PHYSICAL EDUCATION



SCIENCE



SOCIAL SCIENCES & HUMANITIES

Cardiovascular Tissue— Heart Valves and Pericardium

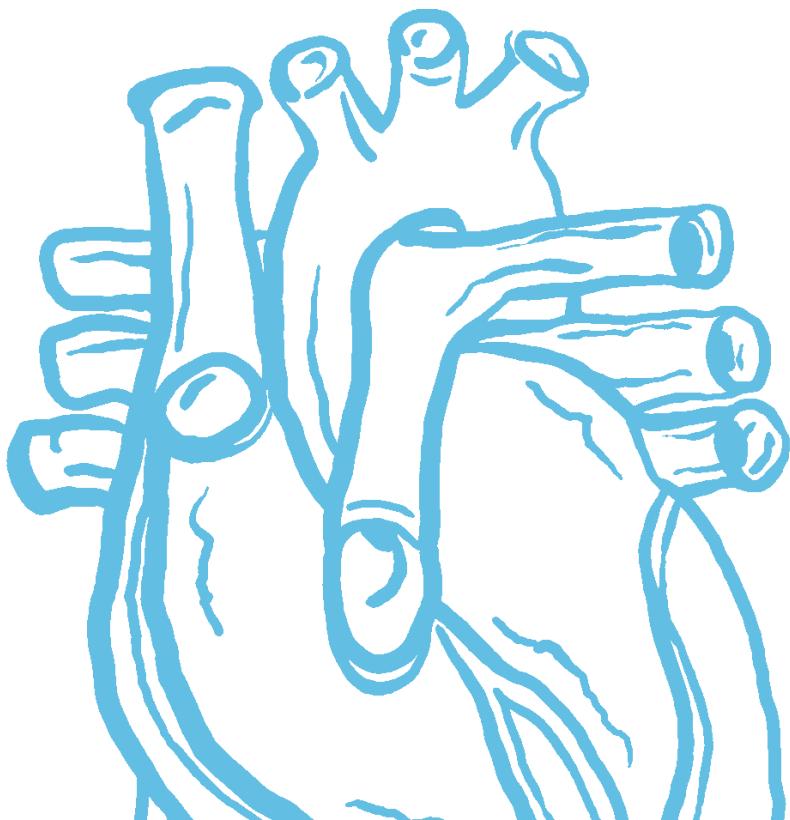
You have read about people whose lives are saved by receiving a heart transplant, but people can also receive life-saving heart valve transplants.

Your heart has four chambers and each chamber has a valve associated with it. Heart valves open and close to allow blood to flow forward in one direction only – which is key to a healthy, functioning heart. When heart valves close, flaps of tissue close tightly together to create an important seal. Unfortunately, the heart valves of children and adults can thicken, scar and fail if they suffer from heart disease, congenital defects, rheumatic fever, infection or calcium deposits that accumulate with aging. The donation of heart valves can be used to replace those valves that are diseased or damaged, allowing the heart to resume its normal function.

People can also donate their pericardium (the protective sac that surrounds the heart), which can be used in a variety of surgeries, repairs to defects in the walls of blood vessels in children and as a patch in brain surgery.

You may be interested in knowing that most heart valve surgeries occur in children and in fact the only cardiovascular tissue bank in Ontario is located in a children's hospital – The Hospital for Sick Children in Toronto.

So in addition to donating tissues like skin, bone and eyes, you can also donate important cardiovascular tissue.



One Life...Many Gifts is a curriculum resource to educate senior secondary school students about the vital importance of organ and tissue donation and transplantation. It brings to life the drama, generosity and the life-saving promise of donation and transplantation.

Funding for this project has been provided by the provincial Ministry of Education and the Ministry of Health and Long-Term Care. This project would not have been possible without their support or the generosity of an anonymous Ontario resident whose contribution ensures that students in the province understand the life-saving promise of organ and tissue donation and transplantation. The Steering Committee sincerely thanks all of our supporters.

The development of this curriculum has been co-sponsored and coordinated by the Trillium Gift of Life Network, the Multi-Organ Transplant Program at London Health Sciences Centre and The Kidney Foundation of Canada.

Educating secondary school students and their families about the need for organ and tissue donation and the success of transplantation was originally initiated in the London region in 2000. With funding received from The Kidney Foundation of Canada, the Multi-Organ Transplant Program at London Health Sciences Centre had the vision to develop a unit of study, *One Life...Many Gifts*, working with both the Thames Valley District School Board and the London Catholic District School Board. The original program was used in Healthy Active Living Education, Grade 11, Open (PPL30) in Ontario's curriculum. The curriculum resource before you builds on the vision and foundation provided by this original program and the Steering Committee gratefully acknowledges the dedication and pioneering effort of all those involved in the original program.

This curriculum is dedicated to the many Ontarians who have given the gift of life through the donation of organs and tissue and to the many others who will in the future.

For more information on the *One Life...Many Gifts* curriculum program please contact the Director of Communications, Trillium Gift of Life Network at 1-800-263-2833 or visit: www.onelifemanygifts.ca

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Medical health-care professionals from the field of organ and tissue donation and transplantation and educational advisors were involved in the development and implementation of the *One Life...Many Gifts* project.

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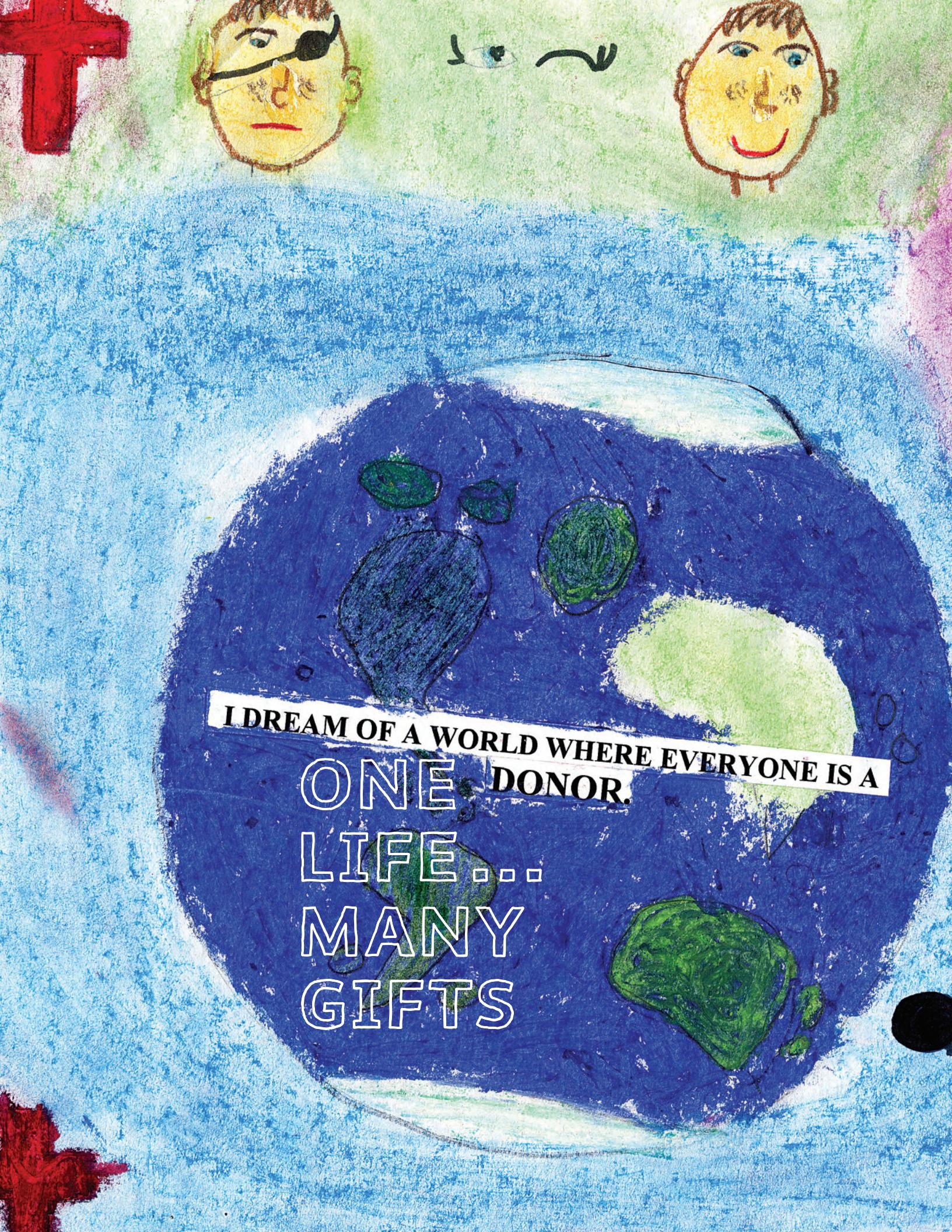
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The Steering Committee gratefully acknowledges and thanks the many individuals who contributed to the success of this project. Donor families, recipients, health-care professionals, educators and community members were all very generous with their time and expertise. *One Life...Many Gifts* is richer because of their participation.



I DREAM OF A WORLD WHERE EVERYONE IS A
ONE DONOR.
LIFE...
MANY
GIFTS