

# Brain Breakthroughs

*It's About Time*



# Brain Breakthroughs

Your brain is what makes you, *you*. It defines how you think, how you feel and how you function. When something goes wrong with your brain, it shatters your sense of being, and ripples out to family and friends.

But it doesn't have to be this way. You have the opportunity to accelerate our pace of discovery and dramatically *change lives* with the launch of our *Brain Breakthroughs* campaign.

*One in three Canadians* will be affected by a brain disease, disorder or injury. And BC's population is aging, so disorders of the brain will inevitably increase. *Time is of the essence*. Only with accurate and timely diagnosis, expert care to improve quality of life and ongoing research to push our boundaries of knowledge can we meet this urgent need.

We've already assembled *expert teams* who have made it their mission to solve the most difficult challenges in brain health — Alzheimer's, dementia, Parkinson's, stroke, epilepsy, traumatic brain injuries, concussion, neuromuscular diseases, MS and more. We need your help.

Your philanthropic support will keep vital research moving forward. It will also help current patients receive rapid and more accurate diagnosis, obtain the most up-to-date treatments and provide access to *the brightest and the best* — the very doctors, technicians, nurses and care workers you'd want by your side if you suffered a brain disorder.

Our goal is to raise *\$35 million*. These funds will provide immediate support for our clinicians and researchers who are working tirelessly, providing the best care today *and* researching the treatments of tomorrow.

Together, we can achieve brain breakthroughs, both big and small, providing time for the people of British Columbia. Time for *research and discovery*. Time that will *save lives*. And time with the *people we love*.

*Join Us.*

## *...It's About Time*

# 1 in 3 Canadians will be affected by a brain disease, disorder or injury



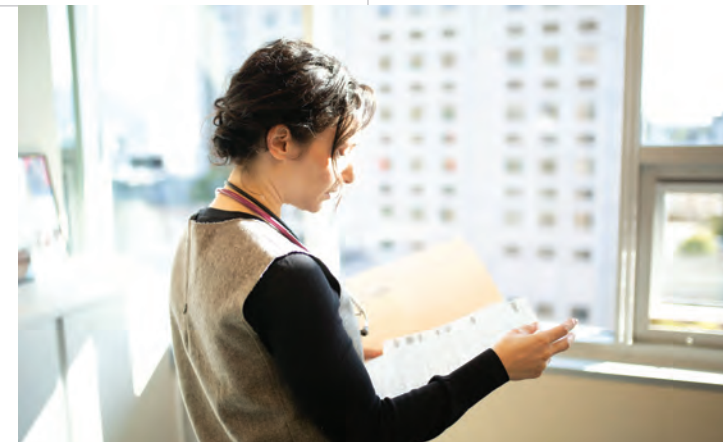
BRAIN INJURY IS THE LEADING CAUSE OF DEATH AND DISABILITY FOR CANADIANS UNDER 40.

DEMAND FOR TREATMENT AND CARE OF AGE-RELATED BRAIN DISEASE IS ON THE RISE IN BC.

750,000 CANADIANS OVER 65 ARE LIVING WITH ALZHEIMER'S OR DEMENTIA. THIS NUMBER IS EXPECTED TO DOUBLE BY 2030.

456 CANADIANS SUFFER A TRAUMATIC BRAIN INJURY (TBI) EACH DAY. THAT'S ONE PERSON EVERY 3 MINUTES.

HEALTH CARE AND LOST PRODUCTIVITY COSTS ARE IN THE BILLIONS ANNUALLY IN CANADA.



STROKE KILLS MORE MEN THAN PROSTATE CANCER.  
STROKE KILLS MORE WOMEN THAN BREAST CANCER.

1 IN 5 WOMEN AND 1 IN 6 MEN WILL HAVE A STROKE.



APPROXIMATELY 1.5 MILLION CANADIANS LIVE WITH THE EFFECTS OF AN ACQUIRED BRAIN INJURY.

THE BRAIN IS THE MOST COMPLEX AND LEAST UNDERSTOOD ORGAN IN THE BODY.

YOUR BRAIN IS YOUR MOST VITAL ORGAN AND IT CANNOT BE REPLACED.



PERMANENT DISABILITY FROM BRAIN INJURY IS A DAILY REALITY FOR 80,000 BRITISH COLUMBIANS.

A TRAUMATIC BRAIN INJURY CAN RANGE FROM A MILD CONCUSSION TO A SEVERE HEAD INJURY.

# Brain Breakthroughs *start here*

If you have a serious brain disease or injury in BC, you will benefit from one of the sites and services we support.

As the primary philanthropic partner of Vancouver Coastal Health, VGH & UBC Hospital Foundation is uniquely placed to use your philanthropic support for maximum impact as we work together to create system-wide change and transform health care.

*Join Us.*

WE ARE THE ONLY PLACE IN BC WITH THE EXPERTISE TO DIAGNOSE AND PROPERLY CARE FOR PATIENTS WITH SOME OF THE MOST COMPLEX BRAIN INJURIES AND DISEASES

## VANCOUVER GENERAL HOSPITAL

- BC's referral centre for stroke, traumatic brain injury, epilepsy, neuromuscular diseases and other neurological conditions
- The largest teaching hospital in Western Canada — recruiting and training the best health care providers in BC
- One of only two Level 1 adult trauma centres in BC with the resources to provide the most specialized care in Western Canada
- Home to cutting-edge medical technology, including *BC's first Hybrid OR* and future home of an advanced *3T MRI machine*.

## UBC HOSPITAL AND THE DJAVAD MOWAFAGHIAN CENTRE FOR BRAIN HEALTH

- BC's referral centre for neurodegenerative conditions such as Alzheimer's, Parkinson's, dementia, MS and neuropsychiatry
- Home of innovative approaches to care, including numerous clinical trials and the *Brain Wellness Program*
- A centre of excellence that brings together experts in the fields of neuroscience, neurology, psychiatry and rehabilitation with specialized research spaces and an integrated neuroimaging suite.



## GF STRONG REHABILITATION CENTRE

- BC's most comprehensive rehabilitation centre for people with spinal cord or brain injuries
- Home to the province's *ALS Clinic*.

## VANCOUVER COMMUNITY HEALTH SERVICES

- Your community health care connection, providing the right care at the right place and the right time
- Home to the future *Dementia Caregiver Clinic*.

## VANCOUVER COASTAL HEALTH RESEARCH INSTITUTE

- One of Canada's top-funded health research institutes for new brain health treatments and cures, with research and clinical facilities located across Vancouver.





it all happened so fast.

morning, I got up out of bed with my wife, Deborah

I fell back into my chair.

couldn't move my legs ca

started  
sudden  
denly a



She saw in my eyes that something was terrifi

that somethin

was terribly,

wrong. Then

No words came

out of my mou

my brain ticking away with every second.



I was having a stroke...



When I woke up at VGH  
I couldn't talk or walk.  
I had no memory of who  
my wife or kids were.  
That hit me hard.

DAVID  
Thank you for each  
& every day for  
loving me. You are  
my everything  
Love  
D.

# When a stroke strikes... *It's About Time*

### DAVID FREEDMAN

It all happened so fast. I was getting out of bed, when suddenly my knees buckled underneath me. I fell back and I tried to speak, but I... I couldn't. Only garbled sounds — not words — came out of my mouth. I couldn't move my legs. My wife Deborah tried to help me up. I saw by the look on her face that she knew something was terribly wrong.

I could only watch as Deborah grabbed the phone and dialed 9-1-1. My brain ticking away with every second.

**Me ticking away with every second.**

### DEBORAH, WIFE

My heart was racing as I drove behind the ambulance. I felt so scared that I didn't know what was going on with David. I couldn't bear to think about losing him. My husband of nearly 30 years. Wonderful father to our two beautiful children. And still my very best friend.

I never imagined our time together would be ending so suddenly, **too soon...**

When I arrived in the Emergency Department at VGH, David was already surrounded by a myriad of medical staff. Within minutes, they completed a CT Scan.

I lost my breath when they told me that David had suffered a stroke.

It didn't seem right. David was fit and healthy. How could this be happening to him? To us?

**1 IN 5 WOMEN AND  
1 IN 6 MEN WILL HAVE  
A STROKE.**



Treatment  
 Administered tPA (heavy-duty blood thinner.)  
 Symptoms improved. Monitor for changes  
 — Dr. Thalia Field

**DR. THALIA FIELD**  
 Stroke Expert

- Vancouver Stroke Program Clinical Research Fellowship, 2014
- Associate Professor, Division of Neurology, UBC
- Neurologist, Postgraduate Program Director and Co-director of Research, Vancouver Stroke Program
- Fellowship Program Director training the next generation of stroke neurologists in BC

**DR. THALIA FIELD**

The important thing to know about strokes is that *time is crucial*. The longer a stroke goes untreated, the higher the risk of physical disability and permanent cognitive impairment.

So when David entered the doors of VGH, a swarm of medical professionals sprung into action immediately, all doing different jobs in parallel to assess and provide treatment as soon as possible.

We administered a drug straight away to dissolve the clot blocking blood flow to David’s brain. We stabilized his condition...but there was still more work to do.

During the hours that followed, we closely monitored David. It was during this time that he started to develop more issues with speech and movement on his right side. I made the call to notify my colleagues to prepare for an emergency stenting procedure.

David’s procedure was a success. He had stabilized and made it through the most dangerous period of time after his symptoms began.

**DAVID**

When I woke up at VGH, I couldn’t talk or walk. I had no memory of who my wife or my kids were. That hit me hard.

Over a number of days I started to regain some of my memory. Visits from Deborah and our two wonderful kids — Sydney and Adrian — made me determined to get better.

After I recovered from my surgery, I was enrolled at GF Strong Rehab Centre — a bootcamp for my brain and body.

For hours each day, I worked with a team of occupational, physio and speech therapists. It was agonizing and embarrassing at times, but I was willing to do anything that would help me get better. And my rehab team were there for me every day, helping me one step and one word at a time.

During my six months of rehab, I went from not being able to say a word to giving a speech at my sister’s wedding. Today, our family is stronger than ever before. The world-class medical teams at VGH and GF Strong have given me back my life. And I am making the most of every day!

David is one of thousands of British Columbians who are hospitalized each year because of a stroke. And that number is increasing due in part to a growing and aging population.

Whether you are brought to VGH, or another hospital in BC, you benefit from the Vancouver Stroke Program through the VGH Stroke Pager, where stroke specialists are on-call 24/7 to provide support to physicians across the province.

The highly specialized, 24-hour vital care provided by the Vancouver Stroke Program at VGH is possible because of philanthropy. Together, we can provide the time for hope.

To ensure the best outcome for stroke patients like David, we need to continue to invest in the best people. People like Dr. Thalia Field.

Your support funds the best care possible, including the recruitment of the next generation of medical leaders, and research to improve and advance clinical practice.

*Brain Breakthroughs. It’s About Time.*

*Time that saves lives.*

*Fund stroke research and fellowships.*

“Today, our family is stronger than ever...  
 I am making the most of every day!”

DAVID

# Time... to save more lives

## PATTI GLASS

*“My dad was not a ‘typical’ stroke victim. He was a very healthy man — he ate well, he was active. When his stroke happened, it was so shocking and so fast. Despite quickly getting medical assistance, tragically there was nothing that could be done because a bleed occurred deep in my dad’s brain.”*

Despite the fast response, once Patti’s father, Robert, came through the doors at VGH, the depth of his hemorrhagic stroke proved disastrous. Three weeks later the family decided together to honour Robert’s wishes and allow him to pass peacefully. Patti knew then that if there were anything she could do to help prevent this from happening to another family, she would do it. So she is supporting our *Brain Breakthroughs* campaign, helping steer philanthropy to advance medical research and treatments of the brain.

*“Our family misses him terribly and wants to support advances in stroke prevention and early diagnosis. I believe early detection could have changed his outcome.”*

“I do see a day when someone like my dad can come into the Emergency Department and leave a healthy person again.”

PATTI



VGH and UBC Hospital medical teams are pushing the boundaries of stroke care and research. Our world-leading experts such as Dr. Philip Teal (left), Dr. Sam Yip and Dr. Thalia Field are undertaking research to improve the early detection of potential strokes, enhancing care and quality of life, and training the stroke experts of tomorrow. This means that in the future people like Robert will have a better chance to not just survive, but thrive.

## GLOBAL LEADER & PROVINCIAL RESOURCE VANCOUVER STROKE PROGRAM AT VGH

No matter where you are in BC, if you have a stroke, the Vancouver Stroke Program at VGH will help. This world-leading program provides highly specialized inpatient and outpatient medical care for stroke patients. Stroke neurologists respond to urgent consultations, evaluating patients experiencing a possible acute stroke anywhere in the province — 24 hours a day, 7 days a week, 365 days a year.

VGH Stroke service  
24/7 365/YR





*That's when I saw the headlights.*

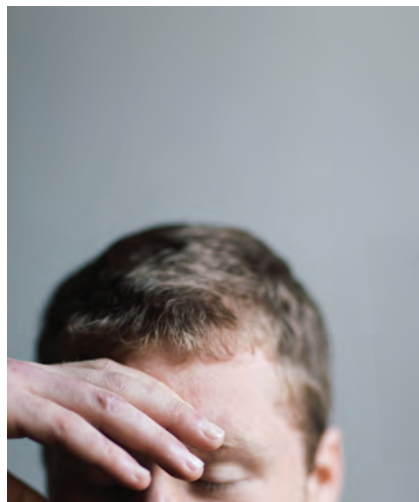
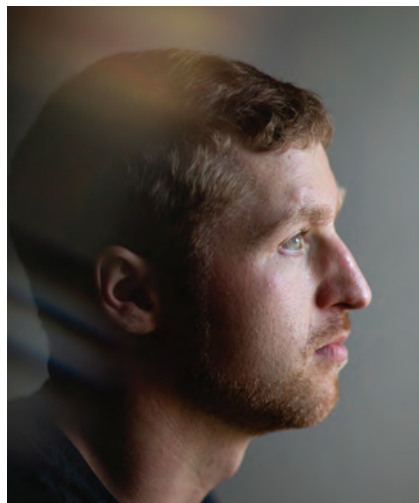
T B

*I don't remember anything after that.*

I

Traumatic  
Brain  
Injury

RYAN JONES  
22 YEARS OLD



They told me my heart stopped for 35 minutes

# Time... for personalized care

## RYAN JONES

The accident happened while I was driving to fight a forest fire. There was a massive blaze near Fort St. John and we got the call to help, so me and my team were rushing to the scene. As I was driving the wheels got stuck in the snow and my car veered into the oncoming lane.

The last thing I remember were headlights.

They told me my heart stopped for 35 minutes.

*To Ryan, one minute he was driving and the next he was in a recovery bed. But to his parents, Donna and Jim, it felt like a lifetime.*

**PERMANENT DISABILITY FROM BRAIN INJURY IS A DAILY REALITY FOR 80,000 BRITISH COLUMBIANS.**

## DONNA, MOM

At VGH, I looked down at Ryan and hardly recognized him. He was a mess, just full of tubes, and he didn't look like Ryan. He didn't look like my son.

Our hearts broke as the doctors told us they didn't know if Ryan was going to live. I couldn't lose him. He was only 22 years old — my baby boy.

it was just a regular morning  
the... like... but so real...  
...  
...  
my...  
...  
...  
...

## DRS. MYP SEKHON AND DON GRIESDALE

Ryan was in really bad shape. He had a significant brain injury from a lack of blood flow to the brain during his cardiac arrest. His leg and his hand were broken. We didn't know what kind of person he would be when he woke up — *if* he woke up.

When your heart stops beating, your brain doesn't get the oxygen it needs. That, plus the trauma from the accident itself, put Ryan's brain at risk.

Looking down at the young man in front of us, we knew we had to give him every fighting chance. That's when Don and I decided to try something revolutionary. For the first time in the history of medicine, we used the Brain Bolt on a cardiac arrest patient.

The Brain Bolt is a specialized monitoring tool and each year VGH conducts the most cases in all of Canada using the technology. It is costly and requires specialist training as it involves inserting electrodes into the brain. The technology allows us to monitor the pressure and oxygen levels inside the brain.

Immediately after inserting the Brain Bolt catheters, we received vital information from Ryan's brain and began personalizing his care.

For the first time in the history of medicine, we used the Brain Bolt on a cardiac arrest patient.



## RYAN

I woke up from an induced coma 10 weeks after the accident. I don't remember my early recovery. I couldn't speak, walk or even feed myself.

I started rehabilitation at GF Strong Rehab Centre. It was the best place I could be to recover. Every day was a struggle, but my parents moved to Vancouver to help me. They say they were just waiting for me to show some kind of sign that I was still there.

And then one day, my dad dropped a sock on my wheelchair tray. I picked it up and threw it to him. Surprised, he threw the sock to me again, and I caught it and threw it back. It was the first time I was really able to interact with my family. It was my first big breakthrough.

My other breakthroughs took time. At GF Strong, I spent hours practicing walking, talking, holding a pen and writing — which came out as squiggles at first. But after a few weeks I could clearly write my name again.

RYAN RYAN  
RYAN RYAN  
RYAN RYAN  
RYAN RYAN

Having to relearn everything was intimidating. Trying to talk, I knew I wasn't making proper sentences but when you're surrounded by other people in the same situation I didn't feel so alone.

After my accident, I didn't think it was going to be possible to go back to firefighting because my body and brain were not in good shape. Now, after my rehab, I have a second chance. I'm going to pursue what I love for my career.

*Drs. Sekhon and Griesdale, along with neurovascular surgeon Dr. Peter Gooderham are continuing to advance the care of patients with acute brain injuries. The results of their ongoing study of the effects of the Brain Bolt are astounding.*

*Previously, patients had a 37% chance of regaining full brain function following a traumatic brain injury. Now, the recovery rate is 60%.*

*Ryan's case served as the impetus for Drs. Sekhon and Griesdale to complete a first-in-human study of the Brain Bolt in cardiac arrest patients. The breakthrough results provided invaluable insights into how best to save the brain after cardiac arrest.*

FIRST  
BRAIN BOLT  
SUCCESS!

Thank you Dr. Sekhon, Dr. Griesdale,  
and all of the nurses at VGH.  
You saved my life. I even started  
skiing again! I'll never forget you!  
— Jamie

“The brain is like a black box. With the Brain Bolt technology, we now have the tools to see inside.”

**DRS. MYP SEKHON AND DON GRIESDALE**

The Brain Bolt is an incredible example of how philanthropy can save lives. Donor funding brought the Brain Bolt to VGH. Previously, we applied a one-size-fits-all approach to regulating blood pressure in patients with brain injuries. But not anymore. This technology gives us a personalized approach to care. *It has the potential to save thousands of lives in BC.*



Brain injury is the leading cause of death and disability for Canadians under 40.

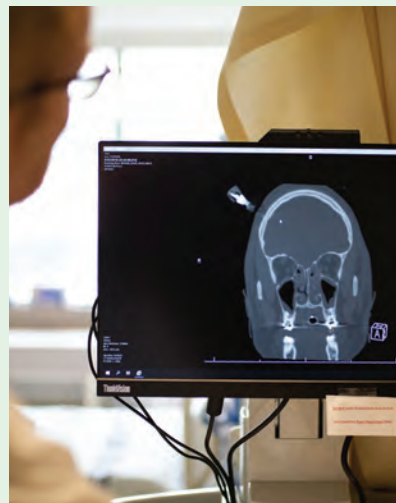
VGH is one of only two Level 1 adult trauma centres in BC. If you suffer a serious brain injury anywhere in the province, you'll likely be sent to VGH. Our Neurocritical Care Program, a joint effort between Critical Care and Neurosurgery, is internationally recognized. With the Brain Bolt and other innovations to patient care, the program is saving lives and improving the chances of recovery.

Philanthropy plays a key role in supporting this vital program. Donor funding purchased VGH's first Brain Bolt device, and now never-before-seen advances in personalized medicine are happening right here in Vancouver.

This is why we need you. By supporting *Brain Breakthroughs* you can invest in the best clinical tools, technology and people. More clinicians need to be trained to use high-tech tools like the Brain Bolt.

Your donation can fund Neuro Intensive Care Fellowships, so that VGH can recruit the very best talent — the people you'd want by your side if you suffered a brain disorder. They will save lives and further develop innovative treatments, right here in BC.

*Brain Breakthroughs. It's About Time.  
Fund the next generation of neurological leaders.*



# Timely Concussion Care



## THALIA'S CONCUSSION

Thalia Otamendi loved soccer. But over the years the sport took its toll on her body, and right after finishing her undergrad studies she suffered a serious concussion while playing. At first, Thalia thought the symptoms would go away on their own — the headaches, being unable to handle bright lights or noise and the exhaustion. But they didn't.

Her therapists advised her to avoid potential triggers. But after months of living in her mother's basement, Thalia developed depression and anxiety. Nothing seemed to help. That is until she met Dr. William Panenka.

Dr. Panenka's treatments, based on the latest research methods, enabled Thalia to make a full recovery from her anxiety and depression. She was grateful and inspired — she wanted to learn more. Thalia is now a PhD student studying psychological effects in concussion patients.



Thalia is not alone. An estimated 25% of mild traumatic brain injury (TBI) patients develop a mental health condition such as depression or post-traumatic stress disorder within three months of their injury. Such conditions triple the risk of long-term disability after mild TBI.

Mental illness is the leading cause of disability in Canada. Philanthropic funding supports our neuropsychologists developing personalized approaches to better diagnose and treat mental health conditions.

**“Everything was too bright, too noisy. I didn't know what was wrong with me — I was scared.”**

THALIA



Dr. Noah Silverberg is mobilizing family physicians to more effectively identify and manage mental health complications after mild TBI, supporting recovery, enhancing quality of life and fostering productivity.

Dr. Robert Stowe (above) is researching why some people with schizophrenia don't respond to treatment. He believes the answer may lie in our DNA and is using genetic testing to create a highly personalized map of the interactions happening within cells. His work will inform future schizophrenia treatments.

These are only some of the donor-funded projects that have the potential to make an incredible impact on mental health in BC, and around the world, giving hope to those who need it most.

One in five Canadians will experience mental illness or addiction in their lifetime. The stigma around these conditions means that many more are suffering in silence.

Our neuropsychiatrists and neuropsychologists are making advances in understanding the physical and biological connections to mental health. By improving our understanding of the causes, we can provide earlier diagnosis, more personalized treatments and better support for patients who often have nowhere else to turn.

We need your help. Philanthropy is the catalyst to accelerate our pace of research and discovery.

On average, our researchers are able to leverage every dollar of donor support to secure two dollars of research grant funding — tripling your impact.

Together we can fund breakthroughs in brain health research, transforming standards of care here in BC and beyond.

*It's not just about surviving. It's about thriving.*

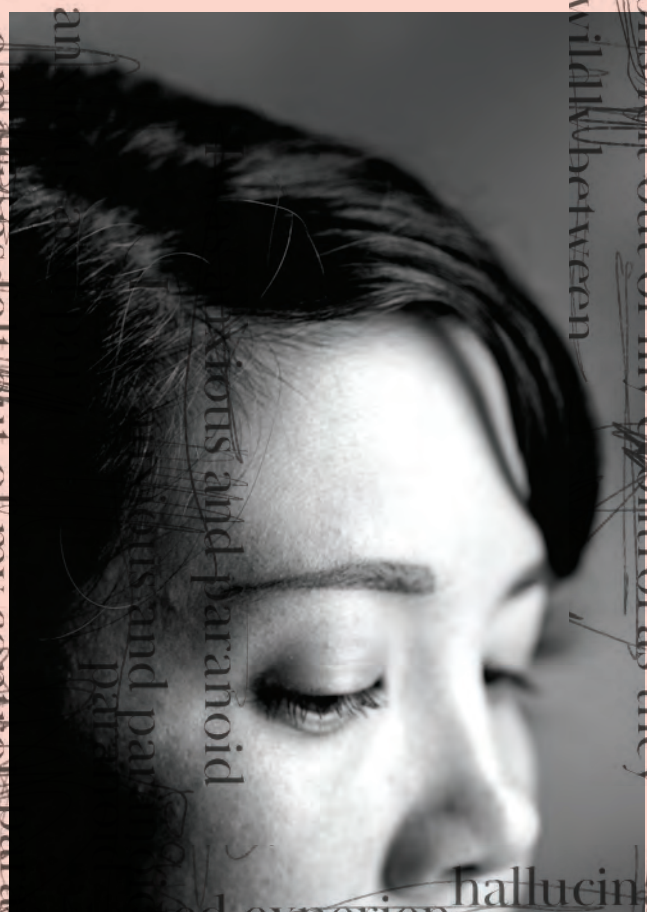
*Support Brain Breakthroughs.*



Then it things got worse and worse and worse and worse and worse and worse

I was anxious and paranoid

emotions felt out of my control  
varied wildly between extremes



anxious and paranoid  
emotions felt out of my control  
varied wildly between extremes

I was anxious and paranoid.

hallucination  
hallucinations  
I lost myself.

Nothing worked. *Then I had my first seizure.*



I can't describe the feeling of watching your child's entire personality melt away..



Emily was a kind, patient & intelligent young woman.

# Time... for accurate diagnosis

## EMILY CHAN

For weeks I couldn't sleep. I would lie in bed, close my eyes and *will* my brain to shut off.

It didn't work.

I would pace up and down the stairs trying to tire myself out.

That didn't work. Nothing did.

My parents thought it was stress-related. I had just moved back to Vancouver, started a new job, and was crammed into an apartment with my brother, his partner and their new baby.

*Then I had my first seizure.*

Paramedics brought me to another hospital at first but they couldn't find anything wrong with me. The doctors sent me home. And then things got worse and worse.

I was anxious and paranoid. My emotions felt out of my control as they varied wildly between extremes. Eventually I started hallucinating.

*I lost myself.*

## SALLY, MOM

I can't describe the feeling of watching your child's entire personality melt away. Emily was a kind, patient and intelligent young woman. *And she was turning into someone else entirely.*

Doctors initially told us it was psychological, so I took Emily to a psychologist. But nothing was helping. If things didn't improve, Emily faced admission to an inpatient psychiatric unit.

So I did what any parent would do for their child — *I fought*. I believed it was more than psychological. A lumbar puncture revealed a diagnosis of Anti-NMDA receptor encephalitis (ANMDARE).

*This diagnosis changed our lives.*

**YOUR BRAIN IS YOUR MOST VITAL ORGAN AND IT CANNOT BE REPLACED.**

“I don’t remember a lot of my time at VGH, but I do remember that I was almost never alone.”

EMILY

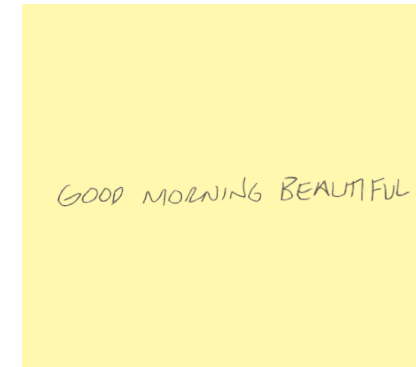


**DR. ROBERT CARRUTHERS**

ANMDARE is an extremely rare autoimmune disease. Emily’s immune system was essentially attacking her brain.

Instead of admitting her into a psychiatric unit, losing precious time as her brain continued to break down, Emily was transferred to VGH. She was admitted to the neurological stepdown unit and we began treatment immediately.

We gave Emily steroids and plasma exchange before treating her with Rituximab, which set her on the road to recovery. Progress was initially slow and during her two month hospitalization we had to manage a myriad of personality and behavioural changes. Thankfully, VGH is staffed by specialist nurses who are trained in complex patient cases like Emily’s, which require both physical and psychological support.



**SALLY**

To remind Emily who she was, my husband and I decorated her hospital room with old photos. And we wrote her notes — things like, *We love you* and *We’re thinking of you always, Emily* — just in case she woke up by herself.

We also wanted the team of people caring for her to get a sense of the real Emily while she was recovering and re-finding herself. Emily the amazing, intelligent, capable human being. A beautiful person.

We are so grateful to Dr. Carruthers and the team who ensured that Emily received the right treatment, and provided the care she needed. If we hadn’t come to VGH, I don’t know what would have happened. Our little girl could have died.



**THE BRAIN IS ONE OF THE LEAST UNDERSTOOD ORGANS IN THE BODY.**





## EMILY

I don't remember a lot of my time at VGH, but I do remember that I was almost never alone. And the nurses were incredible. They were always there for me. Some nights they'd run laps up and down the stairs with me, just so I could burn off energy and try to sleep.

*Slowly, I began to  
feel like myself again*

## DR. ROBERT CARRUTHERS

After two months of treatment, Emily's symptoms were brought under control. She was sleeping more, and her anxiety and paranoia were gone.

Over time, Emily returned to her regular life. One day, I saw her walking down Main Street, laughing and smiling with friends. It hit me then. That we saved this person and gave her a whole life to lead, and that was incredible to see.

Since then, I've given lectures to residents, teaching more physicians to recognize and treat this rare disease, so that the next person in Emily's situation can receive the right diagnosis and care.

*Dr. Carruthers was originally brought to Vancouver with philanthropic funding to support career development and provide him with dedicated research time. It's all part of our commitment to bringing the best medical talent to BC.*

When something goes wrong with your brain, it shatters your sense of being, and ripples out to family and friends.

Accurate diagnosis is the first step towards treatment and recovery. When you don't know what's wrong — with yourself or a loved one — every minute of uncertainty feels endless.

Together VGH and UBC Hospital are the only places in BC with the expertise to diagnose and properly care for patients with some of the most complex brain disorders and diseases.

*It's about time.* Every moment counts when patients like Emily are facing an undiagnosed brain condition. We are investing in expert teams to provide timely, accurate diagnosis and improve access to the most effective treatments.

And we need your help. Together, we can equip these experts with the tools and technology they need to provide the best possible care for patients across BC.

Capital projects like VGH's first 3T MRI machine and a second Hybrid OR will improve imaging and surgical capabilities at VGH, and ultimately provide more timely diagnosis and effective treatment options.

*Support more accurate and timely diagnosis.*

*Support Brain Breakthroughs.*

# Time... for advanced imaging

Seizures or convulsions occur when abnormal signals from the brain change the way the body functions. Under the right conditions, any normally healthy person can have a seizure. They can be scary to witness and traumatizing to experience — never knowing when the next one might start — while walking to work, holding your child or driving a car.

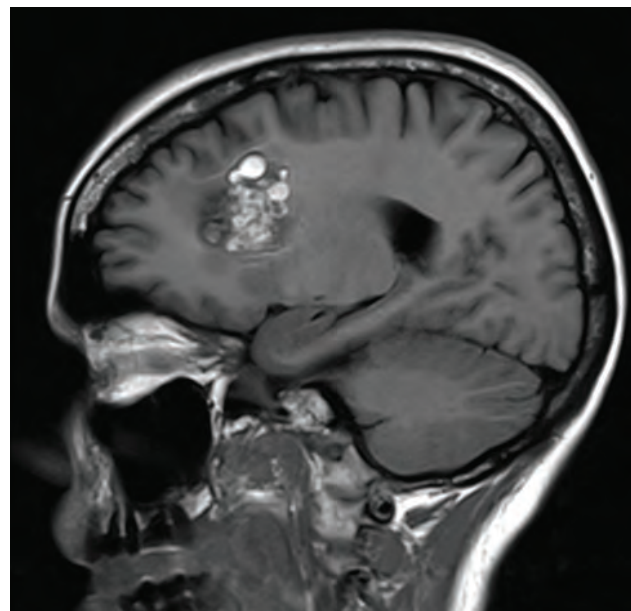
Discovering the cause of seizures is the key to swift and effective treatment. That is where advanced imaging technology can be essential.

## ADVANCING MAGNETIC RESONANCE IMAGING (MRI)

Veronique began to seize violently in the passenger seat of her car. She'd never had a seizure before. At VGH, a sequence of MRI scans revealed that Veronique's brain had several cavernomas: abnormal clusters of blood vessels which can hemorrhage and cause seizures, or even death.

She needed surgery, and fast — every seizure came with the risk of additional brain damage. Investigation with EEG identified the cavernoma that was responsible for the seizures. A team of experts, led by world-renowned neurosurgeon Dr. Gary Redekop, removed the lesion that was responsible. Following extensive rehabilitation at GF Strong, Veronique has recovered.

*"Most of the complex brain disorders that require specialized surgical care are done only here at VGH,"* says Dr. Redekop, "And for many of these cases, successful imaging is the lynchpin of it all. Donations allow us to have state-of-the-art technology and solve the difficult mysteries. This means we can save more lives."



Acquiring VGH's first 3T MRI machine will allow us to meet rising demand for imaging at a much higher level of accuracy. It offers twice the signal strength of our current technology, enabling clinicians to detect even the tiniest tissue changes. Tumours and other conditions are found earlier, diagnosis is more accurate, and recoveries are improved for patients from across BC.



# Time... for life-saving surgery

## SEIZURE INVESTIGATION UNIT (SIU)

More than 32,000 adults in BC have diagnosed epilepsy. Natasha Wasmuth's symptoms started as a teenager in BC's Interior, progressing to the point that she was often unable to leave the house.

After numerous MRI scans, a lesion was discovered on her left temporal lobe. Surgery was Natasha's only potential treatment option and she was referred to the Seizure Investigation Unit (SIU) at VGH to be assessed — the only place in BC able to provide the necessary tests.

The SIU medical team monitored her seizures in real-time and Dr. Gary Redekop performed a lesionectomy, removing the damaged areas from her brain. Since her 2013 surgery, Natasha has remained free from tonic-clonic seizures.

"VGH transformed my life," says Natasha. "After years of medication and endless neurological testing, it was the specialists at VGH who made my seizures stop. And gave me my life back."



**"When you donate or fundraise for equipment that will help change and save lives, there is no better feeling in the world."**

NATASHA

VGH IS HOME TO  
BC'S EPILEPSY CLINIC.

World-leading clinical staff at VGH need cutting-edge, precise equipment to help them do their life-saving work. Donor funding will expand the SIU and build a second Hybrid OR at VGH. Both of these projects will reduce wait times for British Columbians in need of care.

Time is of the essence. You can help ensure that the right tools and equipment are available when you need them.

*It's About Time. Donate now.*





*I remember  
falling in love  
with Linda  
like it was  
just yesterday*

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**750,000 CANADIANS OVER 65  
 ARE LIVING WITH ALZHEIMER'S  
 OR DEMENTIA. THIS NUMBER  
 IS EXPECTED TO DOUBLE  
 BY 2030.**

# Losing Linda to Alzheimer's... *a matter of time*

**PAUL BLANCHET,  
 HUSBAND AND CAREGIVER**

I remember falling in love with Linda like it was yesterday. I had just returned home from working abroad and Linda — a lifelong friend of my sister — asked if I wanted to meet for a drink and catch up. We had kept in touch as friends over the years, but that drink changed my life. A year later, we were married.

Through our time together we shared adventures. Linda and I had two wonderful children, Matt and Monique. We loved to travel together. We loved skiing. We cooked, and often just talked the nights away. We loved our life together.

Then one day in 2012 everything changed. At just 56 years old Linda was diagnosed with Alzheimer's. With no cure, the shock of facing this terminal disease was overwhelming for our family.

My mind flooded with memories — small things I had noticed about Linda's behaviour and brushed off as anything but serious at the time. She had been forgetting computer passwords and she had a couple of car accidents. Linda was a realtor and wrote a lot. I remember seeing some of her handwriting and over time it just seemed to get messier and messier.

*After Linda's Alzheimer's diagnosis, Paul and Linda travelled from Kamloops to Vancouver for a consultation at the Clinic for Alzheimer's Disease and Related Disorders (CARD).*

*CARD is the only comprehensive specialty clinic for dementia in BC. It provided the resources Linda and Paul needed to understand Alzheimer's and its impacts.*

**CLINIC FOR ALZHEIMER'S  
 DISEASE AND RELATED  
 DISORDERS (CARD)**

CARD at the Djavad Mowafaghian Centre for Brain Health is Canada's premier Alzheimer's clinic and research centre. Under the leadership of Dr. Haakon Nygaard, it runs one of the nation's largest clinical trials operations and is building worldwide research partnerships to fill the gaps in our knowledge of brain disease.

With philanthropic support, the team at CARD is developing a stem cell program to build a human model of Alzheimer's. It compares healthy and diseased cells to understand what can go wrong in the brain and test potential treatments. This approach allows for a highly individualized assessment of Alzheimer's — opening the pathway for precision medicine.

## PAUL

Over time, Linda's mind deteriorated and I shifted to becoming her full-time caregiver. Feeding, bathing and keeping her company, all the while working in a fast-paced high-tech company. It was exhausting, but I would do anything for my best friend; the woman I love most in the world.

For years I was Linda's support, but as the disease progressed, I could not keep up and she needed more. The dreaded time had come for Linda to go into residential care.

Thankfully, when we moved Linda into her care home just down the block, she didn't realize she had even moved from home. She didn't suffer and she is very well cared for. At this point, that's all I can ask. While we all work hard to support those affected by this dreadful disease, the end goal is a cure. Research must continue, the faster the better for all of us on this earth.

*No statistic can ever fully capture the impact of Alzheimer's on patients and their families. It's a physical, emotional and financial burden, but we can do more to support caregivers and provide hope for tomorrow.*

“It was exhausting, but I would do anything for the woman I loved most in the world.”

PAUL



Thank you, I go home each week feeling understood and cared for, better equipped to face the nights and days ahead.

## TIME FOR CAREGIVERS

Dr. Heather D'Oyley (left) is a Geriatric Psychiatrist with a vision. During her years working with seniors, she saw a need for support for caregivers.

The number of Canadians living with dementia is expected to double by 2030. These patients require increasingly comprehensive care as their condition progresses. This places a significant strain on our health care system, and on family caregivers who often provide complex round-the-clock care to loved ones — spouses, parents, siblings and friends.

When you commit to this type of care, it's an unpaid full-time job, often on top of traditional employment. And there are no days off. It takes a significant mental, physical, emotional and financial toll on caregivers and their families.

Here in BC, 31% of these unpaid caregivers report significant distress.

This is why we are supporting the launch of the Dementia Caregiver Clinic, developed by Dr. D'Oyley with a team of other experienced clinicians.

The clinic will provide distressed caregivers with comprehensive assessment, evidence-based group therapy and individual counselling, all while their loved one is cared for by dementia professionals.

With your support, we can expand this initiative into a sustainable model that will provide hope for caregivers and their families.

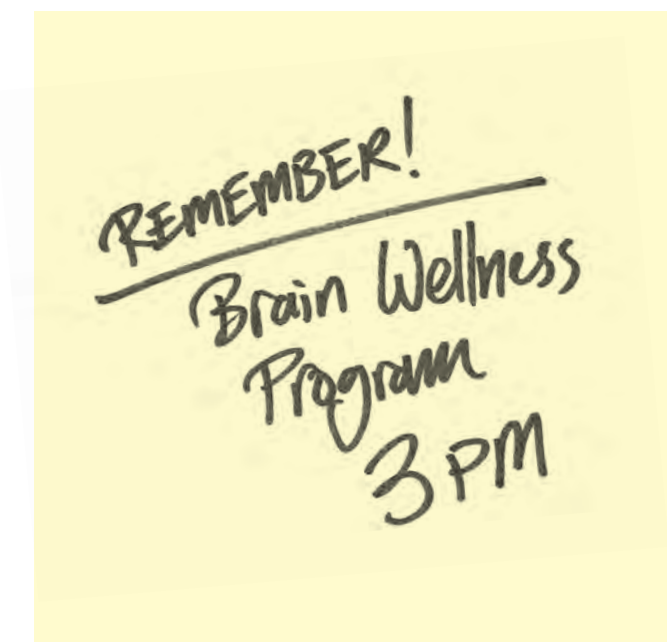
## TIME FOR A BETTER QUALITY OF LIFE

One in 12 Canadians are living with a neurodegenerative disease. While researchers are working towards prevention and cures for these conditions, there is an ever-growing number of patients in need of care right now.

Dr. Kristine Chapman, Director of the Neuromuscular Diseases Unit at VGH, is working with neuromuscular disease patients, streamlining their journey of care, alleviating chronic pain and improving their overall quality of life.

Dr. Silke Cresswell and the Brain Wellness Program at the Djavad Mowafaghian Centre for Brain Health are providing hope. The program will bring together a unique multi-disciplinary team to employ drug-free therapeutic strategies, including music and physical therapy, cognitive training, nutrition, and community building activities.

This blend of mental, physical and creatively-stimulating activities aims to improve both the mental and physical well-being of patients with neurodegenerative diseases and bring meaningful connection to isolated individuals.



# Time... for restoring families



## PARKINSON'S

*"Some mornings I would wake up and literally crawl down the hallway because of how much pain I was in. I could barely control it — my body was working against me."*

Steve Blackthorne was just 36 years old when he started to have tremors. He didn't know it then, but it was an early sign of Parkinson's.

At first, medications were managing the symptoms. Over the years it grew worse and Steve stopped doing a lot of things in his life, living in constant fear of the pain and tremors.

Then he was referred to Dr. Christopher Honey (above middle) for a life-changing



medical procedure called Deep Brain Stimulation (DBS). An electrode is implanted in the brain that, when switched on, makes tremors stop. With donor support, we can purchase DBS equipment to bring this life-changing procedure to more patients in BC.

"I remember that moment so vividly," says Steve. "When Dr. Honey switched it on, I could feel it working immediately. My shaking stopped."

DBS isn't an option for all patients. For them, Dr. Martin McKeown is developing a lightweight, wearable device to normalize brain rhythms in Parkinson's patients — improving their motor function and preventing falls.



## AMYOTROPHIC LATERAL SCLEROSIS (ALS)

An estimated 3,000 Canadians are living with ALS and 80% of individuals with ALS die within five years of diagnosis. There is currently no cure. Dr. Neil Cashman (above) is testing promising new drug compounds to stop ALS progression and give these patients more time with their loved ones.

## MULTIPLE SCLEROSIS (MS)

British Columbia has one of the highest rates of MS in the world. MS is a disease where our own immune system attacks the protective sheath that covers nerve fibres. This causes communication problems between the brain and the rest of the body. Dr. Anthony Traboulsee is working to expand clinical trial capacity, and Dr. Jacqueline Quandt is researching how to harness the body's own immune system to halt the damage done by MS and help the brain repair itself.

Alzheimer's, Parkinson's, dementia, MS and neuromuscular diseases such as ALS all have one thing in common — they destroy parts of our brain and nervous system in ways that are not natural.

Every moment Paul spent as a caregiver for Linda was done with love. Let's help other caregivers and their loved ones live their best lives together.

As BC's population ages, the number of people living with, and caring for those with, neurodegenerative disease will increase. And they need our help.

The hospitals and health care centres we support are uniquely positioned to provide the best care to patients and their families today, while researching the treatments of tomorrow.

*Brain Breakthroughs* is funding people and programs making new discoveries, developing new procedures and implementing new approaches to care. This collective power is transforming the brain health care landscape for patients, families and our communities — shaping it positively for generations to come.

*Because when it comes to making memories with our loved ones...*

*It's About Time.*

*Join us in providing time for loved ones. Support Brain Breakthroughs.*

I Love my Daddy But  
My Dad hated parkinson's

# The future of Brain Breakthroughs

Our goal is to raise \$35 million to be rapidly invested in people and care, technology and equipment, and research and discovery to give British Columbians the best possible outcomes. And there's no time to lose. The work we do today will have an immediate impact on patient care and provide hope for the future.

And we need your support.

*Join Us.*

Your donation will provide time.  
Time for research and discovery.  
Time to save lives.  
And time with people we love.

Together, we can achieve brain breakthroughs, both big and small, for all British Columbians.



## PEOPLE & CARE \$12 MILLION

- Funding for clinician-scientists and fellows in areas including *stroke, Alzheimer's, neuromuscular diseases and more* will allow us to attract, educate and retain the best and brightest — the very people you'd want taking care of you today while researching the treatments of tomorrow.
- Creating innovative programs like the *Dementia Caregiver Clinic* and *Brain Wellness Program* will provide patients and families with the relief and support they need not just to survive, but to thrive.



## TECHNOLOGY & EQUIPMENT \$16 MILLION

- Acquiring VGH's *first 3T MRI machine* and building a *second Hybrid OR* will increase imaging accuracy, reduce wait times and improve surgical outcomes.
- Providing equipment to expand *Deep Brain Stimulation* treatments and increasing the capacity of the *Seizure Investigation Unit* will provide hope to more patients.



## RESEARCH & DISCOVERY \$7 MILLION

- Launching new *clinical research studies in BC* so that everyone can benefit from clinical trials of new and improved treatments.
- Advancing *biomarker and genetic testing* will help treat, prevent and slow the progression of multiple diseases through personalized precision health care.

*And More...*



Dementia  
Parkinson's  
Stroke  
Epilepsy  
Alzheimer's  
MS  
Schizophrenia  
Traumatic Brain Injury  
Concussion  
ALS  
Neuromuscular diseases  
Anxiety  
Depression