UNCOMMON PRODUCTIONS *presents*
A BILL HANEY DOCUMENTARY

JIM ALLISON:
BREAKTHROUGH

THIS IS WHAT A HERO LOOKS LIKE

UNCOMMON PRODUCTIONS PRESENTS JIM ALLISON: BREAKTHROUGH
EDITED BY PETER RHODES MUSIC BY MARK ORTON AND MICKEY RAPHAEL NARRATED BY WOODY HARRELSON
EXECUTIVE PRODUCERS TIM DISNEY R.J. CUTLER MAURA McCARTHY MICHAEL EISENSON REED PAUL JOBS SEAN REILLY
PRODUCED BY JENNIFER PEARCE WRITTEN, PRODUCED AND DIRECTED BY BILL HANEY

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SYNOPSIS/PREFACE

JIM ALLISON: BREAKTHROUGH

Jim Allison: Breakthrough is the astounding, true story of one warm-hearted, stubborn man's visionary quest to find a cure for cancer.

Today, Jim Allison is a name to be reckoned with throughout the scientific world — a 2018 Nobel Prize winner for discovering the immune system's role in defeating cancer but for decades he waged a lonely struggle against the skepticism of the medical establishment and the resistance of Big Pharma. Using intimate interviews with Allison and a set of scientific leaders paired with innovative use of graphics and archival material and featuring music from star harmonica player Mickey Raphael and *Nebraska* composer Mark Orton, *Jim Allison: Breakthrough* takes us into the inspiring and dramatic world of cutting-edge medicine, and into the heart of a true American pioneer, in a film that is both emotionally compelling and deeply entertaining.

The director of *Jim Allison: Breakthrough* is Bill Haney, an award-winning documentarian who is himself dedicated to eradicating diseases that lay their dark grip on families the world over. An inventor and entrepreneur, Bill has founded more than a dozen companies, two of which now develop drugs to cure cancer and neurological diseases. *Jim Allison: Breakthrough* traces Allison's remarkable life from his school-boy days in Friday Night Lights, Creationist Texas all the way to Stockholm where, in December of 2018, he accepted the Nobel Prize in Medicine.

Sometimes affectionately referred to as "the Texas T cell mechanic," Allison's singular focus on the T cell and its central role in harnessing the power of our immune systems initiated a series of discoveries on T cells' ability to stop cancer in its tracks. "By stimulating the ability of our immune system to attack tumor cells, Jim Allison established an entirely new principle for cancer therapy," stated the Nobel committee.

Allison's effort was tantamount to climbing Mount Everest. When he began his work, immunology was not considered a true science by academicians and traditionalists. Colleagues who respected his intentions thought he was wasting his time. Nonetheless, he followed his star, never forgetting the suffering of his mother, who died of lymphoma when he was eleven years old. "This left a big hole" he quietly states.

Interviews with influential mentors such as G. Barrie Kitto (Director, Center for Biotechnology, UT Austin) and Allison's post-doctoral student Matthew Krummel (now Professor, Dept. of Pathology, UC San Francisco) enliven the film. At the University of California, Berkeley, where Jim and his group of true believers made important discoveries, he cut an especially colorful figure. "We were like a pirate ship," recalls Krummel, and Jim was the captain.

In 2004, Allison decided to re-locate to New York. Like a bloodhound on a scent, Allison knew he had to work with major pharmaceutical companies in settings such as Memorial Sloan-

Kettering in order to have his research brought to cancer patients. So respected and beloved was he that 90% of his lab uprooted themselves and their families to move to NY with him.

One of the most heart-stopping stories in *Jim Allison: Breakthrough* is that of Sharon Belvin, whose metastatic melanoma diagnosis at age 22 sent her life into a tailspin. Near death after months of failed treatment by chemicals, Sharon agreed to participate in a clinical trial of "ipi," the immunology drug developed from Allison's idea by his partners Lonberg and Korman. Her tumors soon disappeared; she has now been cancer-free for 17 years.

Filmed in 2018 in various locales around the United States, *Jim Allison: Breakthrough* also introduces Malinda Bell, Allison's former wife who called him "the most amazing thing I'd ever seen" when they met at a Sixties fraternity party. Four decades of marriage and one son, Robert, followed. After going their separate ways as friends-for-life, Allison asked scientist Padmanee Sharma to join him in matrimony because "who else obsesses about T cells 24 hours a day." He tellingly neglected to mention her beauty. The couple makes their home in Houston, Texas where he heads the immunology platform at the University of Texas's MD Anderson Cancer Center and is director of the Cancer Research Institute. Drugs that followed the pioneering path he blazed have now treated nearly a million patients, saving the lives of hundreds of thousands—a deeply satisfying cause for celebration.

DIRECTOR'S STATEMENT

Our crazy beautiful world often seems to be shaking apart, torn by strife beyond the ken of man to resolve. 14 billion years after the universe was born, human population on our glorious sparkling corner of interstellar space reached 1 billion. It was 1804.

Global population swelled by 1 billion more in just 11 years. Mass extinction, global climate change, challenging patterns of human migration and painful international strife have resulted – and there's nowhere to escape the stew of disturbing news. The media's 24-hour news cycle showers us with burning shards of stories that suggest an apocalyptic future. We all feel disheartened at times.

And when we look for political leaders to link our communities' vast talents and spirited imagination to pragmatic plans for an inspiring future, we often find those who use fear to foster division rather than leaders who use wisdom, composure and resolve to lead us to higher, common ground.

Still, if we look with care, we can find shining, glorious examples where people of common purpose, courage, talent and imagination work together to accomplish the previously unimaginable. Magic lives in the spirits of gifted leaders who sacrifice for vaulting ambitions, well beyond their self-interest, inspiring teams whose ambitions can unite us all.

Jim Allison: Breakthrough, filmed in our polarized political culture, tells us the tale of such a leader.

Lymphoma, Leukemia, Breast Cancer, AML, Multiple Myeloma, Lung Cancer, Glioblastoma, Ovarian Cancer... Cancer goes by many names, but all cast a devastating shadow. Cancer kills more people than any disease on earth - its dark claws have scarred virtually every family, including mine. Cancer is the world's most constant villain.

No one is pro cancer; every ethnicity, political shade, gender identity, economic group, and regional background fades before our common humanity when we see cancer's face.

For more than 3000 years, we have sought to defeat cancer, and never truly found a cure. Until now.

Jim Allison: Breakthrough tells the story of an extraordinary scientist, born in creationism, Friday Night Lights, south Texas in our pre-television days. A Nobel Prize winner as of October 2018, Jim Allison found his life's mission at age 11, holding his mother's hand as she died of cancer. After years of painstaking struggle, as a scientist at the University of California, he made an epoch changing discovery. He discovered how to trick a patient's own immune system to cure her cancer.

More than 600,000 people worldwide have already been blessed by drugs rooted in this discovery.

If one generous, irreverent, pioneering scientist can lead a dream team to cure cancer, then what else can we do if we truly pull together?

Filmed in hospitals and laboratories around the United States, *Jim Allison: Breakthrough* tells Jim's story, the story of the team he enlists to turn his invention into the first FDA approved immuno oncology drug, and the tale of a 22-year-old woman who becomes the first patient Jim meets cured by his drug. Heartwarming, and inspiring, *Jim Allison: Breakthrough* celebrates a true iconoclast – did I mention Jim plays blues harmonica with Willie Nelson's band – and highlights how courage, passion, determination and a talent for collaboration can take us all to the gardens of a better world.

James Patrick Allison

James Allison, winner of the 2018 Nobel Prize in Medicine, was born on August 7, 1948 in a tiny South Texas town called Alice. Named for the daughter of the legendary King Ranch owner, Alice has boasting rights as birthplace of a second Nobel winner, Robert F. Curl, Jr., who took the honor for chemistry in 1996. It is also where Tejano, a unique Tex-Mex musical genre, took root in the mid-1940s. Tejano may have inspired young Jim to take up the harmonica, which he still performs at parties and events, sometimes sharing the stage with fellow Texan Willie Nelson.

Allison's father, Albert, was a physician and his mother, Constance, a homemaker and "positive influence" who tragically died of lymphoma when he was eleven years old. There were two older brothers, Murphy and Mike. Life was difficult for Jim following his mother's passing. His father, an officer in the Air Force Reserves, was often away from home, during which time he was fostered by a local family with a son about his own age.

Even as a kid, Allison displayed a yen for science. Encouraged by his parents, he toyed around with a Gilbert chemistry set, setting off little bombs in the woods behind their home. A summer in a NSF-funded science-training program deepened his interest. After graduating from high school at sixteen, he entered the University of Texas, Austin where he would earn a B. S. Degree in microbiology (1969) and a Ph.D in biological science (1973). He was a member of Delta Kappa Epsilon fraternity.

But the fierce passion which kindled his interest in curative science, was unquestionably ignited by the early passing of his mother. His life's path was set by the time he entered graduate school, when he convinced his PhD advisor to bring cancer study into the lab.

It was a propitious moment. The immune system's "T-cell" had recently been discovered. A type of white blood cell, the T is a front-line soldier in the battle to keep us healthy, its role assigned by nature to distinguish friend from foe. Though immunology was not even a bona fide science at the time, Allison zeroed in on the immune system's potential against cancer. (His dissertation proposed a new approach to treating leukemia but decades would pass before a similar drug was patented.)

Soon after graduation, Allison began criss-crossing the country in a quest to unlock the mysteries of the T cell. How do T cells work? How do they identify an invader? Why can they recognize the flu virus, for example, but not cancer? In addition to pure knowledge, he sought institutions open to innovative research - not a simple matter in a profession tending toward caution and rigidity. His first stop was Scripps Clinic & Research Foundation in San Diego (1974-77) where he did post-doctoral work. Married by now to the former Malinda Bell, the couple often joined other Texas ex-patriots at the port city's Stingaree bar. He fondly remembers one night playing his harmonica until the wee hours with Willie Nelson and his band. "I didn't have to buy a beer for a couple of years after that," he recalls.

In 1977, he back-tracked to Texas - to the newly opened MD Anderson Center in Smithville, where he could both teach and freely experiment. Above all, he sought the 'Holy Grail' of immunology research: the means by which a T cell recognizes an invader.

By 1982, he believed he had found it. Boldly, he took himself to a convention in California where ordinary scientists like himself were allowed to present their data on a poster board, for all to see and critique. "That is the T cell receptor," he declared, pointing to a spot on the board with the confidence of Luther at Wittenberg. His proof created a sensation. By identifying the molecule by which T cells recognize everything - the T cell Antigen Receptor, or TCR - Jim Allison made history. His subsequent article in the Journal of Immunology shot him to the top of immunologists world-wide, and he no longer toiled in shadows.

After a year at Stanford as a visiting scholar, he continued to the University of California, Berkeley as a professor of immunology and director of the Cancer Research Laboratory (1985-2004), and was concurrently appointed professor at the University of California, San Francisco from 1997. This was the longest and perhaps most fruitful single period of his career. Selecting his lab staff from the best-and-brightest, he fired them up to go the distance - to break through academic dogma.

Time magazine's 1980 cover on Interferon had made immunotherapy a hot topic, and though that drug's potential was never realized, a small group of immunologists were desperate to better understand the immune system's role in fighting cancer. When a French scientist announced the discovery of CTLA-4 (a new protein on the surface of the T cell). While many colleagues believed that CTLA-4 was another accelerator of the immune system, Allison was unconvinced. He insisted they do "the killer experiment," ultimately proving that, in fact, CTLA-4 acted as a brake (or inhibitory molecule) on the T rather than an igniter to action. (The University of Chicago's Jeff Bluestone separately confirmed his findings.)

Only by persistence and years of inconclusive, almost maddening, laboratory experiments, did Allison and his team finally find a way to free the T to do its job. His crucial insight was to find a way to block the protein (CTLA-4) by developing an antibody that allowed the T to identify - and attack - a cancer cell. This represented a new way of using the immune system in cancer treatment because it focused on the immune system and not the cancer.

But this was only the beginning. Now Allison had to convince his colleagues in the medical and pharmaceutical communities to actually manufacture the drug and do the trials. That is why Jim Allison made his next-to-last move - across the continent to New York City - because of its proximity to major companies such as Bristol-Myers Squibb and Pfizer, and to medical institutions such as Memorial Sloan Kettering.

In 2004, Allison re-located to Sloan-Kettering's Cancer Center as director of its Ludwig Center for Cancer Immunotherapy. Over the years he was also affiliated with Weill Cornell Medicine, Weill Cornell Graduate School and the Howard Hughes Medical Institute. He was establishing immunology departments and continuing research but above all else he oversaw the Ipilimumab trials. Finally, in 2011, "ipi" became the first (immune checkpoint inhibitor) drug approved for late stage melanoma treatment by the U. S. Food & Drug Administration (FDA) - commercially known as "Yervoy." Ironically, while Allison's anti-CTLA-4 work shattered its status as a 'wonder drug,' it laid a foundation for the development of "ipi" and many other drugs currently in use against cancer.

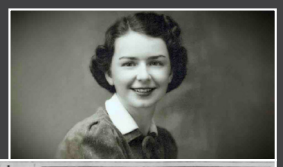
In 2012, Jim Allison went home to Texas, to the MD Anderson Center at the University of Texas, Houston, as professor and chair of the department of immunology, and executive director of the Immunotherapy Platform. His marriage to Malinda Bell was over but he would find a new partner in scientist Padmanee Sharma, whom he married in 2013. By now he had become one of the most lauded immunologists on the planet. In October of 2018, a telephone call from the Karolinska Institutet, Stockholm said he would share that year's Nobel Prize in Medicine with Tasuku Honjo of Japan's Kyoto University, a colleague with whom he had previously shared the Tang Prize in 2014. Life was good.

2018 Nobel Prize in Medicine (with Tasuku Honjo)
2018 Jessie Stevenson Kovalenko Medal (U.S. National Academy of Sciences)
2017 Sjoberg Prize, Sjoberg Foundation & Royal Swedish Academy of Science (inaugural)
2015 Lasker-Debakey Clinical Medical Research Award
2014 Breakthrough Prize in Life Sciences
2014 Tang Prize for Biopharmaceutical Science (with Tasuku Honjo)
2013 Lloyd J. Old Award in Cancer Immunology, AACR Cancer Research Institute (inaugural)
2011 Lifetime Achievement Award, American Association of Immunologists

Membership in the National Academy of Sciences and the National Academy of Medicine

JIM ALLISON TIMELINE

Aug. 7, 1948 — James Patrick Allison born in Alice, Texas



June 8, 1960 — Mother dies of lymphoma


Long Illness Claims Mrs. A. M. Allison

The Alice Daily Echo

1969 — Graduates from University of Texas, Austin with B.S. in Microbiology

Sept. 6, 1969 — Jim and Malinda Bell get married

T-CELL DISCOVERED IN 1959
Jim sees possibilities in *"These wondrous cells at the center of the immune system (which) go all over your body to protect you."*

Sees Willie Nelson play in Austin. Becomes a fan.

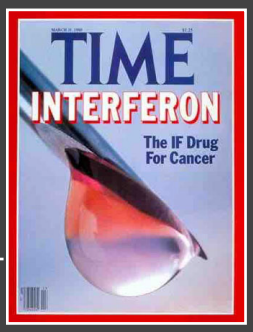
1973 — Receives Ph.D. in Biological Sciences from University of Texas, Austin

1974-1977 — Post-doctorate study at Scripps Research in San Diego

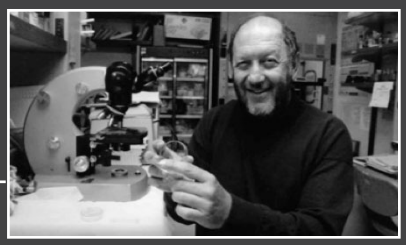
1975 — Plays harmonica with Willie Nelson on stage at Stingaree Bar. Gets free drinks for two years afterward.

1977-1983 — Joins faculty of University of Texas MD Anderson Center in Smithville, Texas where he is allowed exceptional freedom to experiment.

1980 — An early immunotherapy treatment, Interferon promises to be a wonder drug, but falls short of expectations, fueling skepticsm of cancer immunology for decades to come.



1982 — Inspired by a lecture from Irv Weissman, who would become a mentor and friend, Jim has an 'ah ha' moment and discovers the Holy Grail of immunology research - T-cell Antigen Receptor (TCR).



Inspired by a lecture from Irv Weissman, who would become a mentor and friend, Jim has an 'ah ha' moment and discovers the Holy Grail of immunology research - T-cell Antigen Receptor (TCR).

Seminal discovery at a conference in California. Jim presents his data on a poster board, points to a spot and declares: "That's the T-cell receptor."

Jim is first to discover the TCR: how a T-cell recognizes an invader. Overnight recognition follows.

1983-84 Stanford University to study under Prof. Irv Weissman as visiting scholar. Jim receives a job offer to teach at UC Berkeley; Irv tells him to go for it.

1985-2004 University of California, Berkeley & University of California, San Francisco (concurrently)

Jim hired as Professor of Immunology and Director of Cancer Research Laboratory. Though immunology was not considered a science, Jim and his 'lab rats' put it on the map. *"His lab was like a pirate ship. We worked like crazy and then partied to unwind. Creativity is important. Can't...let the mind go linear."* - Max Krummel

1990 A son, Robert, is born - now an architect in New York City.

1991 CTLA-4, a molecule on the surface of T-Cells, is discovered by French scientists in 1987 - setting off a race to discover its signfigance. Its role in the activation of the immune system is contentious. Some leaders in the field claim it's another activating signal, but Jim & his collaborators prove that CTLA-4 acts as a brake, not activator - i.e. stops the T-cell from attacking an invader.

Mar. 22, 1996 Publishes seminal article proving theory. March 22, 1996 article in **Science** magazine. Files patent in July 1995.

BREAKTHROUGH IN BOULDER, COLORADO

1998 In Boulder, Colorado, NeXstar Pharmaceuticals licenses anti-CTLA-4 technology from UC Berkeley. Alan Korman introduced.

1998 Fed-up with delays, Jim, Nils Lonberg & Alan Korman make hand-shake deal to prove efficacy of ipilimumab. Take night-and-day wild ride of experimentation. 466 days later, they have it in a patient: a world record.

1999 — Nils Lonberg's company, Medarex sublicenses from NeXstar.

2000 — Jim and Medarex collaborate on trials at UC San Francisco.

2002 — Critical Phase I results of ipilimumab ('ipi') trials published.

GLOBAL RACE ON T-CELL BEGINS BIG PHARMAS COMPETE TO FIND NEW DRUGS FDA WATCHES

2004-2012 — New York, New York

Jim relocates to New York to be near well-funded medical centers and drug companies. 90% of his labmates move with him. *"I went to be nuisance - to stay on their backs so they would fund experiments. My research with animals showed potential for humans but Berkeley had no hospital and therefore no patients."*

Works with Memorial Sloan-Kettering, Weill-Cornell Graduate School of Medical Science, Howard Hughes Medical Center (et al). Becomes embroiled in politics of scientific research - *"keeps fighting like a bloodhound on a scent."*

2005 — Near death, Sharon Belvin's metastatic melanoma gets four doses of 'ipi' and improves.

2005 — Jim's brother, Mike, dies from prostate cancer.

Jim also diagnosed but gets early intervention.

2006 — Sharon Belvin is cancer-free - meets Jim Allison for first time.

2009 — Jim & collaborators convince Bristol-Myers Squibb to do lengthy trials.

2011 — Hallelujah! FDA approves ipilimumab, to be called "Yervoy."

JIM ALLISON, NOW A WORLD-FAMOUS SCIENTIST, GOES BACK HOME TO TEXAS

2012 — The University of Texas MD Anderson Cancer Center, Houston Professor and Chair of the Department of Immunology & Executive Director of the Immunotherapy Platform

2013

Marries fellow scientist, Padmanee Sharma

Jim Allison receives Lloyd J. Old Award in Cancer Immunology, AACR-Cancer Research Institute (inaugural – first winner)

2014

$3 million Breakthrough Prize in Life Sciences
Tang Prize (shared with Tasuku Honjo of Kyoto University) (inaugural)

2015

Jim Allison receives Lasker-DeBakey Clinical Medical Research Award

Jimmy Carter cured of metastatic melanoma with Keytruda, a a second generation drug based upon Jim's original research.

2017

Wolf Prize in Medicine
Sjoberg Prize from the Sjoberg Foundation and the Royal Swedish Academy of Sciences (inaugural)

2018

Nobel Prize in Medicine (shared with Tasuku Honjo of Kyoto University).

Jessie Stevenson Kovalenko Medal from the U.S. National Academy of Sciences

Ongoing

Plays harmonica with Checkpoints, Checkmates and (sometimes) the great Willie Nelson.

FILMMAKER BIOGRAPHIES

BILL HANEY
Writer, Director, Producer

Bill Haney is a filmmaker, inventor and entrepreneur.

As a screenwriter, director and producer, he has made 15 narrative and documentary films and won The Gabriel Prize, A Silver Hugo, The Earthwatch Award, A Marine Conservation Award, and an Amnesty International Award.

Chosen as Global Leader of Tomorrow by the World Economic Forum, he has won a Humanitarian Award from Harvard Medical School, a Distinguished Service Award from the Senior Olympics, the Slow Food Prize, a Genesis Award, and an Achievement Award from the ACLU. Bill has been repeatedly nominated for a NAACP Image Award and won the Pare Lorentz Award.

As an inventor and entrepreneur, Bill started his first company as a college freshman, inventing air pollution control systems for power plants now in use in utilities the world over. He has since founded or co-founded more than a dozen technology companies. Presently, Bill is the co-founder and CEO of Dragonfly Therapeutics, a biotech company developing drugs to cure cancer, and co-founder and CEO of Skyhawk Therapeutics, a biotech company developing drugs to cure Alzheimer's and Parkinson's Disease.

Bill's been a founding member of the national environmental advisory board for the US Environmental Protection Agency, and the President's Circle for the National Academy of Sciences and serves or has served on a variety of non-profit and government boards including for Harvard's Kennedy School, MIT, State and Federal Government agencies, the World Wildlife Fund, the US DOE, the World Resources Institute, and the NRDC. He is the founder and Chairman Emeritus of World Connect, a non-profit partnered with the Peace Corps and dedicating to improving the health and welfare of mothers and children in the developing world, with programs now launched in more than 1500 villages in 30 countries. Bill is an inventor on more than 100 granted or pending patents, has a BA from Harvard College and served as a Fellow of Harvard's Kennedy School.

Bill's portfolio as a film maker includes award-winning documentaries on socially important subjects such as coal mining (*The Last Mountain*, 2011) and worker exploitation (*The Price of Sugar*, 2007) and his work as writer/producer on Tim Disney's civil rights drama, *American Violet*.

Jim Allison: Breakthrough, his new work, celebrates the imagination and resilience that our greatest scientists display on their quest to push the frontiers of knowledge. Featuring the extraordinary journey of immunologist Jim Allison from his childhood in foster support after the death of his mother in Friday Night Lights, Creationist Texas to his groundbreaking achievements in cancer research, Bill plumbs the incredible human drama of a life as a pioneer in the life sciences. Haney was inspired to highlight Allison's discoveries after hearing his college roommate Tyler Jack's description of Allison's amazing life. Made with partner Tim Disney under their Uncommon Productions banner, *Jim Allison: Breakthrough* was shot across the U.S. in 2017 and 2018, with its final day of filming taking place hours before Allison received the 2018 Nobel Prize in Medicine.

SELECTED FILMOGRAPHY

2019 *Janis* (pre-Production)
2018 *Jim Allison: Breakthrough*
2011 *The Last Mountain*
2007 *The Price of Sugar*
2006 *Accelerating America*
2005 *A Life Among Whales*
2004 *Racing Against the Clock*
2002 *Gift of the Game*

JENNIFER PEARCE
Producer

After graduating with a degree in English Literature from the University of Rhode Island, in her home state, Jennifer Pearce lived peripatetically for several years. She traversed most countries of the world, living for extended periods in three of its most glamorous cities - Paris, New Orleans and San Francisco. She also lived for three years on a 33-foot sailboat...crossing an ocean...sailing the Mediterranean...spending winters in Turkey and Crete.

Eventually she came back home - or near to it, to Boston, where she set her sights on documentary films. "I easily found work within the vibrant documentary film community and the local PBS station WGBH." For the past twenty years, she has worked on films about science, history, and biographies of Louisa May Alcott and Edgar Allan Poe. "I am there from the beginning of production and contribute to all aspects of the film's development."

IN ADDITION TO JIM ALLISON: BREAKTHROUGH, HER CREDITS INCLUDE:

2016 *Poe Buried Alive* (PBS' American Masters)
2011 *The Great Famine* (PBS' American Experience)
2009 *WE SHALL REMAIN: Trail of Tears* (PBS' American Experience)
2008 *Louisa May Alcott: The Woman Behind Little Women* (PBS American Masters)
2006 *The War That Made America* (PBS) Cine Golden Eagle Winner
2004 *The Most Dangerous Woman in America* (NOVA)

PETER RHODES
Editor

Trained in the art and craft of cinema at the BBC, in his native country, Peter Rhodes moved to the United States in 1986 where he immersed himself in the burgeoning non-fiction film community. He now has more than fifty credits – works of varied style and genre which have aired on PBS or the BBC, and screened at major film festivals. He also produces and directs films for children. His home is in Boston.

Rhodes has a longstanding relationship with Bill Haney and Uncommon Productions, having edited five films prior to *Jim Allison: Breakthrough*. Those notably include *The Last Mountain* (2011), an official Sundance selection and winner of the Pare Lorentz Award, as well as *The Price of Sugar* (2007), winner of the Audience Award at the South by Southwest Film Festival.

His most recent work for others includes *Poetry in America* (2018/19) for WGBH and *Edgar Allan Poe: Buried Alive* (2016) for PBS's American Masters series. Another PBS film, *Latino Americans* (2012), won the prestigious Peabody Award. He conjectures that the most-watched title on his extensive resume is the four-hour *From Jesus to Christ: The First Christians*, made in 1997, which airs every Easter.

OTHER FILMS EDITED BY PETER RHODES INCLUDE:

2015 *The Year We Thought About Love*
2010 History Maker's Conference *Typhoid Mary: The Most Dangerous Woman in America* (Nova)
2009 *Inside the Meltdown* (Frontline)
2009 *The People vs Leo Frank* (PBS) - Special Jury Prize
2006 *The War That Made America* (PBS) - Cine Golden Eagle winner
2001 *Harvest of Fear* (a Frontline/Nova co-production) - duPont-Columbia award.

MARK ORTON
Composer & Musician

Mark Orton is a composer, songwriter and guitarist whose signature sound has scads of fans worldwide. He is a founding member of Tin Hat, a San Francisco based collective whose unique compositions blur the line between chamber music and jazz (the rain is a handsome animal, Foreign Legion, The Sad Machinery of Spring).

He has also scored a number of films, most notably *Nebraska* (2013), Alexander Payne's lauded 'dramedy' starring Bruce Dern. Orton supplied the music for a second Dern picture, *The Lears* (2017), a modern take on King Lear. Others include *My Old Lady* (2014), *Sweet Land* (2006) and *The Good Girl* (2002) starring Jennifer Aniston.

Orton studied at the Peabody Conservatory of Johns Hopkins University and the Hartt School of Music in Hartford, Connecticut. He is the recipient of a Sundance Composer Fellowship and was nominated as Best New Composer by the International Film Music Critics Association. He makes his home in Portland, Oregon.

MICKEY RAPHAEL
Producer & Musician

Mickey Raphael, a native of Dallas, has been part of Willie Nelson's band for more than four decades. In addition to Willie, he has performed and recorded with such titans as Neil Young, Bob Dylan, Johnny Cash, U2 and many others, most recently with Chris Stapleton.

"Dr. Jim Allison and I have more in common than a mutual love for the harmonica," he explains. "I lost my partner to ovarian cancer in 2014 and I keep up with what's going on in the world of cancer research. When I first heard about the work Jim was doing, I immediately reached out to him and we became fast friends."

Invited by Bill Haney to contribute a score for *Jim Allison: Breakthrough*, Raphael contacted Mark Orton, a long-time friend who created the highly-praised score for Alexander Payne's film, *Nebraska*. "I knew we would make a good team and I am honored and proud to have collaborated with him on *Jim Allison: Breakthrough.*"

In 2019, Mickey will perform in more than ninety cities with Willie Nelson. When not on tour, he makes his home in Nashville.

MOLLY SCHWARTZ
Animation Artist

A designer, animator and special effects artist, Molly Schwartz created the titles, science animations and graphics for *Jim Allison: Breakthrough*. She brought to the project her previous experience on the ground-breaking PBS series, *Cancer: Emperor of All Maladies*, produced by Ken Burns and directed by Barak Goodman.

Schwartz is also an installation artist who works directly with museums and other institutions to create wide-ranging visual effects. These include the Paley Center New York, United Nations Pavilion, Brooklyn International Film Festival and many others. She makes her home in Brooklyn.

Born in New York but raised in Oklahoma, Schwartz earned her BFA in painting from the School of the Art Institute of Chicago. After a semester of study in Nepal, she studied art conservation and restoration of works of art on paper, and has a MPS graduate degree in visual programming and physical computing from New York University where she is an adjunct professor in the school's Interactive Telecommunications Program.

Schwartz was the lead designer and animator for *Watchers of the Sky* (2014), winner of a Sundance Special Award for Animation. Among recent projects are *Seeing With Sound* for the American Museum of Natural History, *Take Every Wave: The Life of Laird Hamilton, Rancher Farmer Fisher.*

TIM DISNEY
Executive Producer

A founder with Bill Haney of Uncommon Productions, Tim Disney has partnered with him on fifteen productions as writer, producer or director. The two struck up a friendship as students at Harvard College, later joining forces to make the world a better place. Once *Jim Allison: Breakthrough* is launched, they will commence work on a new project, *Janis*.

The team's environment-friendly business ventures include Blu Homes, the leading builder of green, prefabricated housing, and World Connect, a non-profit specializing in micro grants to women and children in developing countries. Separately, Tim founded the Adamma Foundation, a Los Angeles-Based charitable foundation. From 1992 to 2000, he served as Chairman and CEO of Virtual World Entertainment, a leading developer and operator of 3-D gaming and simulation technology.

As part of the storied Disney clan - grand-nephew of Walt and grandson of Roy — Tim has had a long involvement with California Institute of the Arts (CalArts) and is now Chairman of the Board of Trustees, which presents a set of annual story-telling awards in his honor.

R.J. CUTLER
Executive Producer

A filmmaker, television producer and theatre director of vast experience, R. J. Cutler struck gold as a non-fiction film producer with *The War Room* (1993). Directed by Chris Hegedus and D. A. Pennebaker, it told the tale of Bill Clinton's 1992 presidential campaign and set a standard unmatched until the present. It was a box office hit and festooned with awards, including an Oscar nomination.

A New York native, Cutler graduated from Harvard in 1994 and began working in New York theatre as a director (*Right Behind the Flag, Emerald City, The Secret Garden*). In 1990, he produced the NPR show, *Heat*, which aired live five nights a week and received a Peabody Award. Continuing in a political vein, he made *A Perfect Candidate* (1996 - with David Van Taylor) about Oliver North's failed Senate Campaign. He also conceived and supervised Edgewise, a weekly, magazine-format television show which ran for two years.

Cutler's next achievement was *American High*, a cinema verite look at life in high schools around the country. In 2001, the first fourteen episodes received an Emmy Award for Outstanding Reality Program. His more recent forays include TV movies (*Four Stars, Members Only*) and TV series (*Nashville, Call of Duty ELITE, Restorer Guy*). He also produced the documentaries, The *World According to Dick Cheney* (2013) and *One Nation Under Dog* (2012).

MAURA MCCARTHY
Executive Producer

Maura McCarthy brings two decades of finance, capital raising, and market analysis experience to Uncommon Productions and *Jim Allison: Breakthrough*. At Uncommon, she has supported the finance and distribution of several films including *The Last Mountain* and *William*.

McCarthy began her career at the Federal Reserve as a macroeconomic analyst and followed this as a venture investor in consumer, healthcare and technology companies. She is the co-founder and chairman of Blu Homes, an eco-friendly prefab homes company, and runs Market Development for Dragonfly and Skyhawk Therapeutics. She is also a co-founder of World Connect, a non-profit partnered with the Peace Corps and dedicated to improving the health and welfare of mothers and children in the developing world, with programs now launched in more than 1500 villages in thirty plus countries. She earned a B. A. from Georgetown College in Economics and Philosophy.

MICHAEL EISENSON
Executive Producer

Several important threads of Michael Eisenson's life came together in *Jim Allison: Breakthrough*, among them his long-term commitment to medical research as well as his support of analogous projects helmed by Bill Haney, whom he also calls a friend. The loss of his mother to cancer when he was young propelled him towards more than twenty years of engagement with the Dana Farber Cancer Institute in Boston, where he and his wife, Mary, live. He is also a trustee of the Institute.

In his business life, Eisenson is Co-Chair and Founding Partner of Charlesbank Capital Partners, a private equity firm. He also personally invests in startup companies whose goals conflate with his own ethos. He is a co-founder of Horizons for Homeless Children, a program providing high quality preschool for homeless children. A native New Yorker, Eisenson is a graduate of Williams College where he currently serves as Chairman of the Board. He is Vice Chair of the Board of the Berklee College of Music and an enthusiast of American roots music. *"Few things move the soul like a good harmonica riff,"* he avers.

SEAN E. REILLY
Executive Producer

Sean Reilly is CEO of Lamar Advertising and an early stage investor in several biotech companies targeting solutions in the immuno-oncology space. Sean and Bill Haney have been best of friends since they met the first day of their freshman year in college. Sean has been riding Bill's coattails ever since, including bit producing roles in several of his documentary and feature films.

Most recently Bill has invited Sean to invest in and serve on the board of his two early stage Bio Pharma companies, Dragonfly Therapeutics and Skyhawk Therapeutics. These two companies are striving to make breakthrough contributions to the science of oncology and neurology with drugs that may hold hope for patients that struggle with the most challenging diseases."

SUBJECTS

MALINDA ALLISON

Malinda Bell Allison was born in Vernon, Texas and met Jim within the first few weeks of arriving at the University of Texas in Austin in 1966. They married in 1969, and lived in Austin, San Diego, Berkeley and New York City. Malinda worked as a law librarian and paralegal while Jim pursued his scientific education and career. Their son Robert was born in Berkeley in 1990. When she and Jim divorced in 2012 Malinda moved to Honey Grove, Texas, a small community in northeast Texas where her grandparents were born. She is involved in many volunteer activities in Fannin County, including the Honey Grove Library, the Fannin County Museum of History and the Fannin County Historical Commission. She was Citizen of the Year in Honey Grove in 2014.

MURPHY ALLISON

Eldest brother of James Allison, grew up in Alice, Texas. He earned an undergraduate and masters degree in Mechanical Engineering from Texas Tech University. After college he returned to Alice where he started a family and he worked in the oil and gas industry until he retired. Murphy now lives with his son and his daughter-in-law on their ranch 30 miles outside of Alice.

SHARON BELVIN

Sharon Belvin is a 37-year-old mother of 2 and a stage 4 melanoma survivor. Cancer, however, isn't her whole story; just a key player in an absolutely fantastic life. She had a "normal" happy childhood in Beachwood, New Jersey. She loved sports, goofing off with friends and family, and never had any serious injuries or illnesses. However, when she turned 22 in 2004 that normalcy abruptly ended. She found out that she had stage 4 melanoma just 2 weeks before she was set to marry her now ex-husband, Rob. Through the next 1.5 years that she and Rob actively fought cancer they learned to never take a day for granted and that life is precious and far too short. Though they are now separated, they still remain friends and are both very grateful for the lessons that cancer taught them.

It has now been almost 15 years since her diagnosis and life sure didn't turn out the way she thought it would. From the time she was 7 years old she thought that she was going to be a school teacher. Instead, through her own weight loss journey, after the birth of her 2 children she became a personal trainer and health coach for a hospital system. It was there that she met her now fiancée, Janice. Talk about a life stopping moment. She thought cancer would be the biggest life altering event that she would experience, well ... she was wrong. Finding out that you fall in love with the person and not a gender altered her perception on life irrevocably.

Cancer shaped me into a person that tries to live each day as if it very well could be my last. She would never change the fact she got cancer. She just NEVER wants to have to learn the lessons that cancer taught her ever again.

ERIC BENSON

Eric Benson is a senior editor at Texas Monthly, where he has written about everything from the Senate candidacy of Beto O'Rourke to the Branch Davidian siege outside Waco to cartel violence in the Mexican city of Reynosa. His cover story on Jim Allison, "The Iconoclast," was named best profile (circulation of 60,000 or greater) at the 2017 National City and Regional Magazine Awards. His work has also appeared in the New York Times Magazine, Rolling Stone, and the Oxford American.

JEFFREY BLUESTONE

Jeffrey Bluestone, PhD, is president and CEO of the Parker Institute for Cancer Immunotherapy and the A.W. and Mary Margaret Clausen Distinguished Professor at UCSF. Dr. Bluestone is one of the leading immunologists in the field of T-cell activation and immune tolerance research that has led to the development of multiple immunotherapies, including the first FDA-approved drug targeting T-cell co-stimulation to treat autoimmune disease and organ transplantation and the first CTLA-4 antagonist drugs approved for the treatment of metastatic melanoma.

Dr. Bluestone is an academic leader on a national and international scale. He was the founding director of the Immune Tolerance Network, the largest NIH-funded multicenter clinical immunology research program, testing novel immunotherapies in transplantation, autoimmunity and asthma/allergy; executive vice chancellor and provost emeritus at UCSF and the former director of the UCSF Diabetes Center. Finally, Dr. Bluestone has authored more than 400 peer-reviewed publications and has received numerous awards, including election to the American Academy of Arts and Sciences and the National Academy of Medicine. He was also appointed a member of Vice President Joe Biden's Cancer Moonshot Blue Ribbon Panel.

MICHAEL CURRAN

As a fellow in the lab of Dr. Jim Allison, Dr. Curran was the first to describe the immunobiology and translational potential of combination blockade of the CTLA-4 and PD-1 T cell co-inhibitory pathways, as well as to define the cellular mechanisms underlying the efficacy of 4-1BB agonist antibodies. The focus of Dr. Curran's lab at MD Anderson Cancer Center is on studying the mechanisms by which tumors evade and suppress host immunity, both through intrinsic resistance and through recruitment of an immune suppressive and metabolically-hostile microenvironment. The lab pursues multiple strategies to overcome these suppressive adaptations in immunotherapy-resistant cancers such as pancreatic and prostate cancers and glioblastoma including T cell checkpoint modulation, diminished myeloid suppression, and re-conditioning of tumor metabolism.

RACHEL HUMPHREY

Rachel Humphrey is a medical oncologist who is currently serving as the Chief Medical Officer of CytomX, a biotech company based in South San Francisco where she supervises the clinical development of Probody™ Therapeutics for the development of cancer. Prior to this, she held various senior level roles in cancer drug development including at Cytomx (Board of Directors), AstraZeneca (SVP, Head of the Immuno-oncology department), and Bristol Myers Squibb (VP, Clinical Development). Dr. Humphrey's career is notable for, among other things, overall supervision of the (early and late-stage) clinical development of ipilimumab (Yervoy) at BMS and sorafenib (Nexavar) at Bayer. She is also the lead singer and one of the co-founders of the band, The Checkpoints.

TYLER JACKS

Tyler Jacks, PhD is the Director of the Koch Institute for Integrative Cancer Research at MIT, the David H. Koch Professor of Biology, and an Investigator of the Howard Hughes Medical Institute. Over the course of his career at MIT, Dr. Jacks has pioneered the use of gene targeting technology to study cancer-associated genes and to construct models of many human cancer types, including cancers of the lung, brain, and ovary. His laboratory has made seminal contributions to the understanding of the effects of mutations of several common cancer-associated genes. This research has led to novel insights into tumor development, normal development and other cellular processes, as well as new strategies for cancer detection and treatment. Dr. Jacks has published more than 300 scientific papers.

Dr. Jacks has served on the Board of Scientific Advisors of the National Cancer Institute, is the immediate past chair of the National Cancer Advisory Board, and served as co-chair of Vice President Biden's Cancer Moonshot's Blue Ribbon Panel. He is an advisor to several biotechnology and pharmaceutical companies, and is a member of the Board of Directors of Amgen and Thermo Fisher Scientific. He is a founder of T2 Biosciences and Dragonfly Therapeutics, where he serves as chair of the Scientific Advisory Board.

Among many honors, Dr. Jacks is a member of the National Academy of Sciences, the National Academy of Medicine, the American Academy of Arts and Sciences, and the Fellows of the American Association of Cancer Research Academy. In 2015, he received the Killian Award, the highest honor MIT bestow upon a member of its faculty.

G. BARRIE KITTO

Barrie Kitto grew up in New Zealand and received B.Sc. and M.Sc. (Hons) degrees in biochemistry from Victoria University in that country. Following two years working as a biochemist in the Pathology Department at the 900 bed Wellington Hospital, he came to the United States for further graduate studies at Brandeis University in Massachusetts, receiving a Ph. D. from that institution in 1966. That same year he accepted academic offers of an Assistant Professorship in the Chemistry Department and as a Research Scientist in the Clayton Foundation Biochemical Institute at the University of Texas at Austin. Apart from sabbaticals at the University of California, Berkeley and Duke University he remained at the University in Austin for more than 45 years rising through the ranks to a Full Professorship. He also served as the Director of the Center for Biotechnology at the University from 1989 to 2009. Dr. Kitto has also been the recipient of several teaching awards and was founder of a biotechnology company and a co-founder of an educational multimedia company. He retired as Professor Emeritus in 2014 but still comes into the University a couple of days a week.

Dr. Kitto's research covered a very wide range of topics and was concerned with such areas as how insects fly, detection of food contaminants, the unusual properties of the hemoglobins of marine organisms, controlling screwworm infestations in cattle as well as immunological approaches to cancer and HIV therapies. He has published more than 100 scientific papers and served as Jim Allison's undergraduate mentor and Ph.D. supervisor (along with Dr. William Mandy) from 1967 - 1973

Outside academics, Barrie Kitto is an avid craftsman with a broad range of interests, from making one of a kind pieces of gold and silver jewelry, to more recent forays into metal 3D printing and laser cutting in wood and acrylics. Other endeavors include wood turning, ceramics, glasswork, screen printing and photography. He and his wife Binnie have 3 children and 3 grandchildren.

ALAN KORMAN

Dr. Korman is currently Vice President, Immuno-Oncology, at Bristol-Myers Squibb, where he leads a group dedicated to the development of biologics in tumor immunotherapy. Dr. Korman started his career in the biotechnology industry at Supragen in Colorado in 1993, which became part of NeXstar Pharmaceuticals. At NeXstar, he initiated the development of therapeutics targeting CTLA4. In 2000, he joined Medarex (Bristol-Myers Squibb since 2009) and continued the development of antibody therapeutics in tumor immunotherapy with programs targeting PD-1 and PD-L1 along with the preclinical development of combinations in immunotherapy. Five additional antibodies in immuno-oncology (anti-LAG-3, anti-GITR, anti-OX40, anti-CD73, and anti-TIGIT) are currently in clinical development. Dr. Korman received his PhD in Cellular and Developmental Biology from Harvard University (Cambridge, MA) in 1984, where he studied molecular immunology in the laboratory of Dr. Jack Strominger. From 1984 to 1989, he was a Whitehead Fellow at the Whitehead Institute, Massachusetts Institute of Technology (Cambridge, MA), where he continued his work in molecular immunology in association with the laboratory of Dr. Richard Mulligan. He was also a Charge de Recherche at the Institut Pasteur (Paris, France) from 1990 to 1993, where he studied viral superantigens.

MAX KRUMMEL

Important discoveries come from fundamental research and 'How does this work?' questions. For the past 25 years, Matthew Krummel, PhD, has studied mechanisms that regulate T cell responses and therefore regulate immune function, using cutting-edge real-time imaging methods to ask these kinds of questions. As a graduate student, he discovered the function of a molecule called CTLA-4 and applied these antibodies toward upregulating T cell responses to antigens in vivo and then toward augmenting immune responses to tumors. That approach is now termed 'checkpoint blockade', now FDA approved and widely used for treatment of melanoma and other cancers. He is a poster child whose work demonstrates that basic studies yield clinically-relevant results.

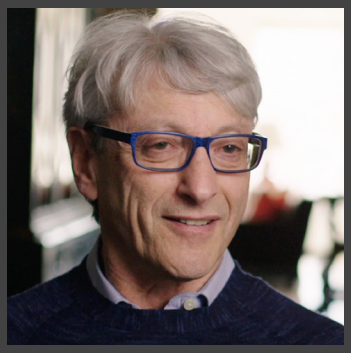
Dr. Krummel's lab at UCSF focuses on figuring out how entire immune systems, collections of cells in complex tissues, work. Their work capitalizes on using cutting-edge time-lapse microscopy to track information processing by the immune system. To do this, they have developed home-built instruments including multiphoton, TIRF and Lattice-Light sheet microscopes. A particular emphasis of the lab is to track, from time-lapse sequences, how information is exchanged in the dense cellular milieu of organs. Their approaches are revealing how motile immune cells 'search' their environment for critical information and the unexpected dynamics of the assembly of complexes of lymphocytes—clusters and temporally ordered aggregates of cells. They have also developed mouse models of breast cancer in which the stromal cells that interact with tumors become fluorescent by virtue of the uptake of very stable fluorescent proteins from the tumor. Through this, his team identified critical stimulatory phagocyte populations in tumors, demonstrating that these are necessary for profound CD8 responses and are a key biomarker that

predicts response to checkpoint therapies. Returning to imaging, they have shown that these phagocytes are maintained by virtue of interactions with tissue resident NK cells that provide them with critical cytokines. This axis provides an important way to understand the challenges ahead in the next round of therapy development.

Dr. Krummel also drives collaborative science. At UCSF, he conceived of, built and staffed an imaging 'collaboratory' which now houses over a dozen microscopes, six 'shared' personnel and serves over 30 labs per year. A second major initiative was a novel industry consortium-funded project called UCSF Immunoprofiler (Immunoprofiler.org) which is moving tumor biopsies into labs in order to understand the biology of individual patients. Dr. Krummel also founded a biotech company, Pionyr Immunotherapeutics, to translate his lab's findings in immunology toward treating those people for whom checkpoint blockade is insufficient. Most recently, he chairs the UCSF ImmunoX initiative, a cross-laboratory initiative share and collaborates in the research community. The downstream aim of all of his research is to understand then use the immune system to improve human health.

LEWIS LANIER

Lewis L. Lanier is an American Cancer Society Professor and the J. Michael Bishop MD Distinguished Professor and Chairman of the Department of Microbiology and Immunology at the University of California San Francisco and is Leader of the Cancer Immunity Program of the UCSF Helen Diller Comprehensive Cancer Center and Director of the Parker Institute for Cancer Immunotherapy at UCSF. Dr. Lanier received his Ph.D. in Microbiology and Immunology from the University of North Carolina – Chapel Hill. After postdoctoral studies, first at the Lineberg Cancer Center at the UNC – Chapel Hill and then as a Damon Runyon – Walter Winchell Cancer Research Fellow at the University of New Mexico, he joined the Research & Development Department at the Becton Dickinson Monoclonal Center in Mountain View, California, advancing to Associate Director of Research and was a Becton Dickinson Research Fellow. In 1990, he joined the DNAX Research Institute of Molecular and Cellular Biology in Palo Alto, California, where he advanced to Director of Immunobiology. In 1999, Dr. Lanier joined the faculty of UCSF. His research group studies Natural Killer (NK) cells, which recognize and eliminate cells that have become transformed or infected by viruses. In recognition of his scientific contributions he was awarded the William B. Coley Award for Distinguished Research in Basic Tumor Immunology from the Cancer Research Institute in 2002, in 2005 was given the Rose Payne Award for contributions to the field of Immunogenetics by the American Society for Histocompatibility and Immunogenetics, in 2010 was elected to the US National Academy of Sciences, and in 2011 was named a Fellow of the American Academy of Microbiology and elected to the American Academy of Arts and Sciences. He was awarded the 2017 Excellence in Mentoring Award from the American Association of Immunologists and served as President from 2006-2007. Dr. Lanier serves on the Scientific Advisory Board of several pharma and biotech companies and research institutes and Editorial boards of scientific journals.



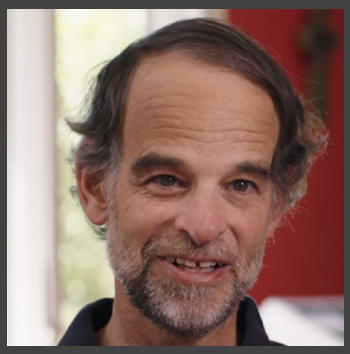
DAN LITTMAN

Dan Littman is Professor of Molecular Immunology at the New York University School of Medicine. He became fascinated by the immune system while in college, and after completing MD and PhD studies he was among the first to identify genes for molecules at the surface of T lymphocytes. As a professor at the University of California, San Francisco, he studied how T lymphocytes develop and function, and discovered how they become infected by the human immunodeficiency virus. More recently, at NYU, he investigates how immune cells are regulated by the intestinal microbiota, whose composition can influence susceptibility to autoimmune diseases and allergies, as well as responsiveness to cancer immunotherapy. Dr. Littman's studies have led to development of therapies for AIDS and inflammatory diseases.

NILS LONBERG

Dr. Lonberg is Senior Vice President, Oncology Discovery Biology, at Bristol-Myers Squibb, where he leads drug discovery efforts for both targeted and immuno-oncology agents. Dr. Lonberg began his career in the biotechnology/ pharmaceutical industry, leading the GenPharm International research group that developed genetically engineered strains of mice with germline configuration human immunoglobulin genes. These transgenic animals have been used to discover more than three dozen clinical-stage human sequence antibodies, including 10 FDA-approved products (golimumab, ustekinumab, ofatumumab, canakinumab, ipilimumab, nivolumab, secukinumab, daratumumab, bezlotoxumab, and olaratumab). GenPharm International was acquired by Medarex in 1997, and then by Bristol-Myers Squibb in 2009. In 1998, Dr. Lonberg's drug discovery group at Medarex began to focus on antibody therapies that target and modulate immune-attenuating pathways to activate patient immune responses to cancer cells (so-called "checkpoint blockade" therapies). Ipilimumab, which began clinical testing in 2000,

was the first-ever checkpoint blockade cancer therapy to enter clinical development and to gain regulatory approval. Ipilimumab, approved in 2011, was also the first drug to demonstrate, in a randomized clinical trial, a survival benefit for patients with metastatic melanoma. A second checkpoint blockade cancer therapeutic, nivolumab, entered clinical development in 2006 and gained regulatory approval in 2014. Dr. Lonberg received his PhD in Biochemistry and Molecular Biology from Harvard University (Cambridge, MA) in 1985, where he studied under Dr. Walter Gilbert. He was a postdoctoral fellow at Memorial Sloan Kettering Cancer Center (New York, NY) and was elected to the National Academy of Engineering in 2015.



ANDREW POLLACK

Andrew Pollack covered biotechnology and the pharmaceutical industry for the New York Times and wrote many articles on cancer immunotherapy as it achieved success over the past several years. He first met Dr. Allison at the 2010 annual meeting of the American Society of Clinical Oncology, where he covered the presentation of some of the first promising clinical trial results for ipilimumab. In his 35 years at the Times, before retiring in 2016, Pollack also covered high technology and Silicon Valley and spent five years as a foreign correspondent based in Tokyo.

MATT RICHTEL

Matt Richtel is a Pulitzer Prize winning New York Times science reporter and bestselling author. His 2019 non-fiction narrative An Elegant Defense explores the extraordinary science of the immune system through the lens of four intimate medical journeys. A previous book, A Deadly Wandering (2014) drew on his Pulitzer Prize winning reporting about distracted driving, told the true story of fatal texting-and-driving crash, and was named a book of the year by numerous publications, including The Christian Science Monitor and The San Francisco Chronicle.

PAM SHARMA

Dr. Sharma is a trained medical oncologist and immunologist whose research work is focused on investigating mechanisms and pathways within the immune system that are responsible for tumor rejection and clinical benefit. She is the Principal Investigator of multiple immunotherapy clinical trials and conducts translational laboratory studies related to these trials. Her studies enable development of novel immunotherapy strategies for the treatment of cancer patients. She is a Professor in the departments of Genitourinary Medical Oncology and Immunology, and the Scientific Director for the Immunotherapy Platform at M. D. Anderson Cancer Center. She is also the Co-Director of Parker Institute for Cancer Immunotherapy at MD Anderson Cancer Center. She received the Emil Frei III Award for Excellence in Translational Research in 2016 and was inducted into the American Society for Clinical Investigation (ASCI) in 2018.

ELLIOTT SIGAL

Elliott Sigal, M.D., Ph.D. is a former Executive Vice President and Director of Bristol-Myers Squibb. He served as Chief Scientific Officer and President of R&D for Bristol-Myers Squibb from 2004 until 2013. Under his leadership, fourteen new medicines came to market including Erbitux (Colon Cancer), Baraclude (Hepatitis B), Orencia (Rheumatoid Arthritis), Sprycel (Leukemia), Eliquis (Stroke), and Yervoy, the first checkpoint inhibitor (Melanoma). He built BMS research into a lead position in immuno-oncology which is revolutionizing the practice of medicine in cancer. In 2012, Dr. Sigal was named the best R and D chief in the pharmaceutical industry by Scrip Intelligence.

Dr. Sigal was a principal architect of the successful Biopharma Transformation Strategy of the company and was instrumental in increasing R&D productivity, developing the company's strategy in biologics and acquiring external innovation in Bristol's String of Pearls initiative.

Dr. Sigal currently serves as a senior advisor to the healthcare team of New Enterprise Associates and also consults for select biotechnology companies including Amgen. He is co-chair of the Scientific Advisory Board of Amgen and is a member of the

Sean Parker Institute for Cancer Immunotherapy Scientific Steering Committee. He is a member of the Board of Directors for the biotechnology companies Adaptimmune, Spark Therapeutics and Surface Oncology. Dr. Sigal joined BMS in 1997 and held roles in both discovery and development before ascending to chief scientific officer. Positions prior to BMS included a faculty appointment at University of California, San Francisco (UCSF), senior executive roles at Syntex/Roche and CEO of the genomics firm, Mercator Genetics. Dr. Sigal received his M.D. from the University of Chicago in 1981 and trained in Internal Medicine and Pulmonary Medicine at UCSF. Prior to medical school he received a B.S., M.S., and Ph.D. in industrial engineering from Purdue University.

JEDD WOLCHOK

Dr. Jedd Wolchok is Chief of the Melanoma and Immunotherapeutics Service and holds The Lloyd J. Old Chair in Clinical Investigation at Memorial Sloan Kettering Cancer Center (MSK) with an expertise in the treatment of metastatic melanoma. The focus of his translational research laboratory is to investigate innovative means to modulate the immune response to cancer as well as to better understand the mechanistic basis for sensitivity and resistance to currently available immunotherapies. Dr. Wolchok also established the Immunotherapeutics group (ITC), a specialized phase 1-2 outpatient unit at MSK for patients with a broad spectrum of malignancies, that is focused on the conduct of novel immunotherapy trials with a specific emphasis on pharmacodynamic biomarker identification. His additional appointments include: Head of the Swim Across America - Ludwig Collaborative Laboratory; Associate Director of the Ludwig Center for Cancer Immunotherapy (LCCI); SU2C–ACS Lung Cancer Dream Team Co-leader; Director of the Parker Institute for Cancer Immunotherapy at MSK; Director of the Cancer Vaccine Collaborative (CVC), a joint initiative between the Cancer Research Institute (CRI) and the Ludwig Institute for Cancer Research (LICR); and ASCO Board of Directors. Dr. Wolchok has helped establish MSK as a leader in the discovery and treatment of cancers with novel immunotherapies.

JIM ALLISON: BREAKTHROUGH

Written, Produced and Directed by
Bill Haney

Produced by
Jennifer Pearce

Edited by
Peter Rhodes

Narrated by
Woody Harrelson

Music by
Mark Orton and Mickey Raphael

Executive Producers
Tim Disney
R.J. Cutler
Maura McCarthy
Michael Eisenson
Reed Paul Jobs
Sean E. Reilly