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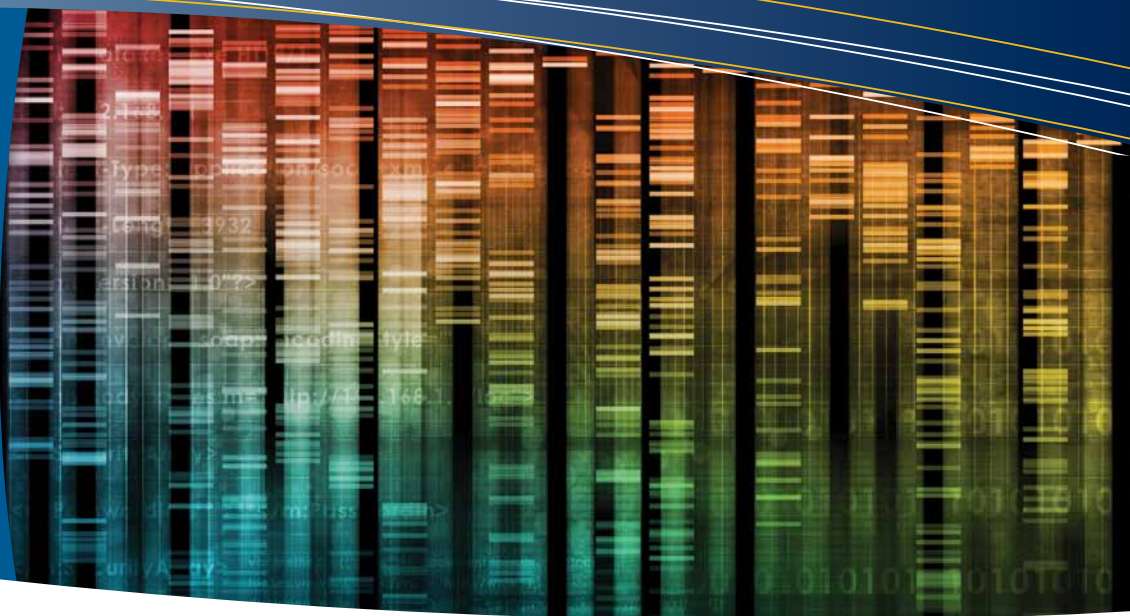
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## RESEARCH SUPPORT:

## ADVANCED COMPUTATIONAL TOOLS FOR ADVANCED MEDICAL CARE

Whole genome sequencing is on the scientific horizon, promising to illuminate our understanding of disease to reveal new treatments, even cures. A full genome sequence, the entire set of approximately 20,000 human genes, returns about three billion genetic data points per person. Mapping such a significant volume of data presents amazing opportunities to explore new scientific understandings; Coriell's President and CEO, Michael Christman, PhD, cautions however, "there are few established best practices in the healthcare industry on how to intelligently mine these data points and return information to patients and physicians in a clinically useful way." To accomplish this critical goal, a significant investment in technology must be made.

Scientific innovation is fueled by progressive funding. The RNR Foundation – a private family foundation committed to advancing human health and quality of life – has awarded a \$600,000 grant to Coriell, an investment infusion that will allow the Coriell Personalized Medicine Collaborative® (CPMC®) research study to be among the first to provide ethical interpretation and risk reporting of whole genome sequence information. The grant also supports new collaborations which will position Coriell at the forefront of genomic information technology advances.

In 2008, the RNR Foundation similarly supported the CPMC study's Informed Cohort Oversight Board, the expert panel that reviews and approves what genomic

information is potentially actionable and suitable for return to CPMC participants. David H. Lord, RNR President, says, "We're a small foundation, and within the global biomedical research community, Coriell is a relatively small research institute. But Coriell is making indelible impressions in personalized medicine by shaping best practices in the United States and worldwide and RNR is proud to support Coriell in this very important effort."

Dr. Christman adds, "Coriell is front and center at a very exciting time in biomedical research. By adding such depth to Coriell's technology repertoire, RNR is advancing our ability to deliver clinical data in an innovative and meaningful manner."

Cover Photo: DNA Banding



## LAB NEWS: MEETING THE CHALLENGE

Coriell Institute prides itself on providing high-quality custom research services in genotyping, cell culture, molecular biology, cytogenomics, and biobanking. Moreover, Coriell takes a collaborative approach to executing these services, and purposefully designed its laboratories and organizational structure to promote dialogue among departments and scientists. A recent project showcases the utility of our expertise and approach.

Agilent, a leader in bio-analytical measurement, recently presented Coriell with a challenging DNA extraction project: Challenging because it required Coriell to extract a volume 200 times Coriell's average yield of DNA per cell culture process within a greatly shortened turnaround time. Coriell had to significantly scale up its cell culture and molecular biology operations while working in concert to produce a final product representative of Coriell's high-quality standards.

As part of the proposal submitted to Agilent, Steven Madore, PhD, Director of Biobanking and Christine Beiswanger, PhD, Director of Custom Genomic and Biobanking Services, crafted a novel DNA extraction protocol to grow cell lines in sufficient quantities to produce the large volume of DNA to satisfy Agilent's requirements.

The cell culture and molecular biology teams – Donna Altamuro, Susan Jones, Kelly Hodges, and Stacy Heil – conducted studies to test the scaled-up procedure. The new protocols were successful, measured by the quality of the resulting large quantities of DNA exceeding Coriell's strict criteria. As such, Coriell was able to move forward with the Agilent contract.

By November 1st, well ahead of schedule, Coriell delivered the full contract to Agilent. Dr. Madore said of the project, "The Agilent request was a great example of Coriell's ability to bring together our combined expertise in cell culture and molecular biology and quickly expand our processes to answer a critical customer need without compromising our renowned quality." Dr. Beiswanger added, "As biomedical research expands in scope and complexity, Coriell remains a leader by being nimble in operation and open to new challenges."



## COLLABORATION: AN INTEGRATED APPROACH TO RESEARCH

Biomedical research repositories collect, process, manage, and distribute biospecimens such as blood and DNA to support scientific investigation. Coriell's biobank is an example of a biorepository that offers the highest-quality biospecimens to researchers around the world. Similarly, patient registries collect and provide access to *de-identified* clinical data to researchers and clinical investigators.

The National Institute of General Medical Sciences (NIGMS) Human Genetic Cell Repository at Coriell Institute for Medical Research has joined PatientCrossroads, a leading provider of registry systems that connect patient communities with research investigators, to integrate a registry of blood and tissue samples linked with *de-identified* clinical data in patient registries. Designed to advance rare disease research, the samples and corresponding clinical information are made available to the international scientific community for use in basic research, gene discovery and the development of potential treatments.

Participating patient advocacy organizations are already benefitting from this proven, cost-efficient, registry-repository partnership. The Congenital Muscle Disease Collection, a collaboration between Cure CMD, the Congenital Muscle Disease International Registry, and the NIGMS Repository was recently established to help advance research and invest in the future of CMD therapy development.

Coriell Principal Investigator, Dorit Berlin, PhD, adds, "The success of any biobank is marked by its ability to continuously provide the highest-quality biospecimens to a diverse range of biomedical research needs. Our partnership with PatientCrossroads expands the power of the NIGMS repository by offering meaningful research data to the scientific community."

## PARTNERS IN RESEARCH: PREDICTING HEART DISEASE TO PREVENT HEART DISEASE

Heart disease kills more Americans annually than any other condition. Countless more Americans suffer from hypertension and high cholesterol. It has been shown that some individuals who know their genetic risk for diseases like heart disease put more effort into living a healthy lifestyle.

Coriell scientists are engaged in a research study designed to determine if genetic testing can accurately predict an individual's risk for coronary heart disease and high cholesterol. If proven, genetic testing could determine a person's risk for disease long before the disease would manifest. Furthermore, if this model can be successfully validated, the approach can be used as a model for other diseases.



## PROFILE: PETER E. DRISCOLL, ESQ

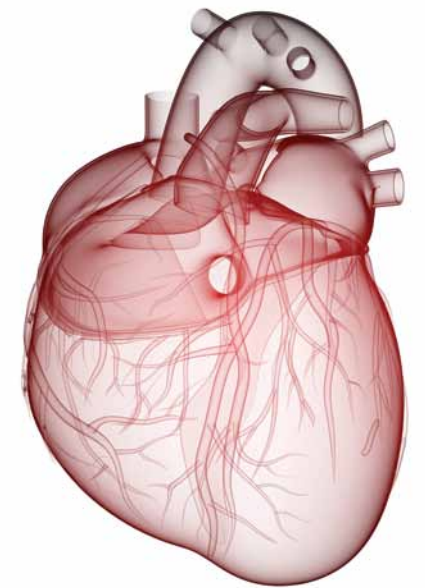
With immense gratitude, Coriell's Board of Trustees, and Coriell's President and CEO, Michael Christman, PhD, recognize Peter E. Driscoll, Esq., for his dynamic service as Chairman of the Coriell Board of Trustees. Mr. Driscoll joined the board in 1992, assuming leadership of the Executive Committee in 2001. Mr. Driscoll was elected Chairman in 2004. Dr. Christman said of Mr. Driscoll's leadership, "As Chairman of the Board, Pete has provided the Coriell Institute with astute guidance and

Funding for this fundamental research question has been awarded to Coriell by the W.W. Smith Charitable Trust. The philosophy of this private foundation has been not to replicate governmental funding organizations, but instead identify and fund projects that are unique and meritorious.

Joseph L. Minzter, Coriell's Executive Vice President and COO, said of the award, "W.W. Smith Charitable Trust has become a valuable partner to Coriell in advancing key research questions. By combining the Trust's commitment to research with Coriell's expertise and state-of-the-art laboratories, we are confident that we can validate a multigenic model in the prediction of heart disease."

Louise Havens, administrator for W.W. Smith, added, "The Trust regards Coriell as a forward-thinking leader in the field of genetics. It is with great pride that we afford their scientific

team the opportunity to alleviate the impact of heart disease in America. This is the very kind of goal the W.W. Smith Charitable Trust seeks to accomplish."



an unflappable belief in its potential. I am personally very grateful to Pete and thankful that we had a chance to work together closely during the last four years. I'm also glad that Pete will remain a trustee of Coriell going forward."

As Coriell moved into the emerging field of personalized medicine, Mr. Driscoll drew upon his strong relationships in the region to effectively promote support for desired laboratory renovations and the establishment of Coriell's multi-million dollar Genome Center. The award-winning renovations have proven central to Coriell's innovative approach to research and the success of the Coriell Personalized Medicine Collaborative® research study.

Long active in our region, in addition to serving on Coriell's board, Mr. Driscoll is trustee emeritus of the Cooper Health System. Mr. Driscoll is, or has been, a member of the Board of Consultors of the New Jersey Bar Association Real Property, Probate and Trust Law Section, the Camden County Guidance Center, and Planned

Parenthood of Greater Camden and many other charitable and civic organizations, including the Haddonfield Board of Education.

Mr. Driscoll is particularly proud of Coriell's venerable presence in Camden County. Confirming his sense of pride, Mr. Driscoll adds, "Coriell Institute has established itself as an anchor institution in Camden while generating equal renown in the international research community. It is the Institute's commitment to science that improves lives, and its ability to attract talented leadership, researchers and staff that has allowed Coriell to succeed in this way."

A former chairman of the law firm of Archer & Greiner, P.C., where he has served as chairman of the Estates and Trusts Department, Mr. Driscoll has more than forty years of experience in estate planning, planning for closely-held and family businesses, estate administration, and estate, gift and transfer taxation. Mr. Driscoll received his undergraduate degree from Williams College and his LLB from Harvard Law School.

LEARN MORE ABOUT CORIELL'S CUSTOM RESEARCH SERVICES.  
VISIT [WWW.CORIELL.ORG/RESEARCH-SERVICES](http://WWW.CORIELL.ORG/RESEARCH-SERVICES)



*Thank You!*

*Thank You!*

*To our friends who support science  
each day at Coriell,  
Our leadership, scientific teams, & staff  
THANK YOU!*

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At Coriell we are using genetics to improve people's health, **2 minutes of your time** can help us bring personalized medicine to more patients.



At Coriell we are advancing stem cell technology to study the causes of devastating diseases, **2 minutes of your time** can propel this research to change how cancer, heart disease, and other complex diseases are studied.



At Coriell we are providing scientists worldwide with cells and DNA to support discoveries, like the gene for Huntington's disease, **2 minutes of your time** can help Coriell ensure needed biomaterials are available for scientific research.



At Coriell we are educating the next generation of scientists to continue our pioneering work, **2 minutes of your time** can guarantee our scientific future is in great hands.

## BEYOND THE INSTITUTE:

### SPEAKING SCIENCE

Coriell scientists and staff are often called upon to lend expertise by discussing our signature research programs and contributing to the conversations around research policy and goals. Recent opportunities place several Coriell spokespersons in front of a variety of audiences, including industry leaders in healthcare, medical students, and patient advocacy groups.

#### Genomes in Clinical Care



This summer, Dr. Michael Christman spoke at the prestigious Institute of Medicine in a roundtable event titled, "Integrating Large-Scale Genomic

Information into Clinical Practice," intended to highlight and identify the challenges and opportunities in incorporating patients' DNA information into routine clinical care. Invited to present their perspectives, attendees included bioinformaticists, clinical investigators, healthcare providers, patient advocacy groups, payers, policy makers, and public health professionals.

Dr. Michael Christman, along with Dr. Heidi Rehm, Assistant Professor of Pathology at Brigham and Women's Hospital and Harvard University, led a discussion that posed many fundamental questions, such as how new genetic knowledge can be incorporated into previously analyzed data; who is responsible for the reanalysis of genomic data; and exploring the ideal model for using genomic information in healthcare.

The Institute of Medicine will release a report on findings from this event before the end of the year.

#### Diabetes Research



Closer to home, the South Jersey chapter of the Juvenile Diabetes Research Foundation reached out to Coriell interested in learning about stem cell research at

the Institute. One of Coriell's talented scientists and speakers, Dr. Karen Fecenko-Tacka, supervisor of Coriell's Stem Cell Laboratory, was delighted to present a talk titled, "Stem Cells

and Regenerative Medicine." Dr. Fecenko-Tacka described Coriell's work with a powerful new kind of stem cell – the induced pluripotent stem (iPS) cell – which is the transformation of an adult cell, like a skin or blood cell, into a stem cell and then into a specialized cell like a cardiac (heart) cell or a neuron (brain cell).

The audience was excited to hear about iPS cells very relevant to them: Juvenile-onset insulin-dependent Type I diabetes iPS stem cells that Coriell has established and characterized for use by the diabetes research community. They asked just how soon stem cell technology will treat and cure Type I diabetes. Dr. Fecenko-Tacka explained that the technology is just four years old and challenges to its safe implementation remain. However, Dr. Fecenko-Tacka explained that looking forward, and with the right funding, Coriell will create "disease in a dish" models that have been proven to further the understanding of human disease.

#### Genetic Testing for Cancer



Dr. Courtney Kronenthal, Coriell's Director of Communications and Development, joined other esteemed speakers from Aetna, Memorial Sloan

Kettering Cancer Center, Geisinger and other organizations in New York City for the 8th Annual Oncology Summit, sponsored by iCore, Inc.

In her presentation titled, "Examining the Utility of Genome-Informed Medicine: What is the Future of Genetic Testing in Oncology?" Dr. Kronenthal described how genomic information is used to shape oncology treatment decisions; for example, the FDA recently approved (August 2011) Zelboraf (vemurafenib), a pharmacogenomically-targeted cancer drug for BRAF-mutated advanced melanoma, together with its companion diagnostic, a biological test that will help direct the use of Zelboraf.

The oncology field of medicine has a long history of using histological examinations of tumor specimens to identify markers associated with prognosis and likely treatment

responses; indeed, oncology is an early adopter of personalized medicine. Dr. Kronenthal went on to discuss the role of genomic information in routine clinical care and how the Coriell Personalized Medicine Collaborative is studying its utility.

**If you would like to engage a Coriell expert to speak at your organization or scientific event, please contact Coriell's Communications and Development group at [communications@coriell.org](mailto:communications@coriell.org).**

## FUNDRAISING:

### INVESTING IN CORIELL, INVESTING IN SCIENCE

Your IRA can support science that matters. The clock is ticking: Consider a tax-free gift from your individual retirement account (IRA) before the end of 2011.

#### Who is eligible?

People 70 1/2 and older may participate. The money must come out of an IRA as a gift, and must pass directly from the IRA trustee to Coriell.

#### Can Coriell receive rollover gifts?

Yes, you may make an IRA charitable rollover gift to Coriell.

#### How much can I give?

You may make an IRA charitable contribution of up to \$100,000 per year without incurring any taxes. Your spouse may also make a tax-free rollover gift up to \$100,000 from his or her own IRA.

#### Can I direct the use of my gift?

Absolutely! Coriell has several signature programs that can benefit from your support, including personalized medicine and stem cell research, or naming opportunities for various laboratories at the Institute. Call Dr. Courtney Kronenthal at (856) 757 9752 to discuss ideas.

#### How long do I have to act?

This tax-free opportunity ends December 31, 2011, but you'll need to allow enough time to get the paperwork processed by this deadline.

## EDUCATION:

### SUMMERTIME SCIENCE

Motivation, a passion for science, and a strong academic record are the attributes Coriell looks for in students seeking a prized place in our Summer Experience program. This past July, six New Jersey students – chosen from a pool of 270 applications – arrived looking forward to a month immersed in science. They worked with Coriell scientists and laboratory technicians to gain practical experience as they rotated through Coriell's laboratories, including Cell Culture, Cryogenics, Molecular Biology, Tissue and Specialized Cell, Cytogenomics, Stem Cells, and our Genome Center.

The students' individual capstone projects were a detailed presentation about a particular research area at Coriell and its societal impact of that research on the world. Following their presentation to Coriell staff, they discussed their experience at Coriell and fielded questions, including several from Coriell's President and CEO, Dr. Michael Christman. Superb insights provided by the students in their closing evaluations reiterated the importance of this program. Indeed, Coriell uses this feedback to continuously refine the Summer Experience program so participants receive a true understanding into the workings of an independent research institute. When asked how they might apply what they learned upon returning to school, their answers included, "I will know so much more about biology this year and will be able to keep up with lessons about chromosomes and genes," "What I learned at Coriell will definitely spread into my school especially when explaining what our future holds for science," "I am taking genetics next year, so many of the things I learned such as FISH and karyotyping and everything about DNA and genes will allow me to contribute to the conversation."

We believe that developing leadership and communication skills alongside technical skills is important for a successful career in science. The students agreed: "The presentation at the end really helped me learn more how to communicate my experience," "I also learned how to be more outgoing in our group," "While waiting for cells in the incubator, I learned how to keep asking questions."

The students each shared three of their most interesting learning experiences; Dr. Tang, Coriell's Director of Cytogenomics enjoyed this feedback: "FISH assay was the coolest! I learned how technicians identify which part of a gene is missing or has been translocated." Dr. Steven Madore, Coriell's Director of Biobanking, was delighted to hear this student's feedback: "I liked using gel electrophoresis which can separate DNA molecules by size to determine if a particular gene has a deletion mutation."

The 2011 Coriell Summer Experience program was a great success, and the Institute is grateful to the William Randolph Hearst Foundation for its partial funding support of this program. Coriell looks forward to welcoming talented students for the 2012 summer program. Interested students can learn more about the program by visiting our website at [coriell.org](http://coriell.org).



Pictured here, (left to right):

Alex Gmunder, a graduate of the Delbarton School, wanted an internship experience that provided him the opportunity to work in a research laboratory.

Nirali Kalaria is from Lenape Regional High School District. Inducted into the National Honor Society in 2010, Nirali will have completed every science class offered at her school by the end of her senior year!

Paige Litten applied to the Coriell Summer Experience to expand her interest in medicine and desire to learn and excel in science.

Klein Aleardi from Moorestown Friends School is interested in a career in scientific research. With a keen interest in robotics, Klein is a founding member of an All-girls Robotics Team.

Austin Billig from Cherry Hill East High School appreciates that while science has many rules and laws to guide us, there remains much room for discovery and innovation.

Angel Mathews from Moorestown Friends School was excited to participate in hands-on laboratory work at Coriell.

## ↳ DID YOU KNOW?

PLANNING FOR THE 2012 "WHAT'S IN YOUR GENES?" EVENT IS UNDERWAY. STAY TUNED BY VISITING [WWW.CORIELL.ORG/EVENTS](http://WWW.CORIELL.ORG/EVENTS)

WHAT'S IN YOUR GENES

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### IN THE PUBLIC:

## 2011 ULLYOT PUBLIC AFFAIRS LECTURE



On December 1, 2011, Michael Christman, PhD, Coriell's President and CEO, will deliver the 2011 Ulliyot Public Affairs Lecture at the Chemical Heritage Foundation at 315 Chestnut Street, Philadelphia, PA 19106. Open to the public, Dr. Christman's hour-long lecture will begin at 6:00 p.m. A reception will follow the lecture.

The Ulliyot Public Affairs Lecture was established in 1990 to emphasize to the general public the positive role that the chemical and molecular sciences play in our lives. Ulliyot lecturers are distinguished in their fields, nationally recognized, and able to communicate to a non-scientific audience.

Registration is required for this event; register at [www.chemheritage.org/ullyot2011](http://www.chemheritage.org/ullyot2011) or by calling (215) 873 8276. There is no charge for this annual event.

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