New treatments for parasitic diseases

Parasitic diseases are responsible for the death and suffering of millions of individuals in Africa, Asia, and South America. Malaria alone results in nearly one million deaths per year, largely children below the age of 5. “Many of the drugs currently utilized to treat parasitic diseases are decades old, suffer from toxicity, and are developing parasite resistance,” says John Siekierka, professor of chemistry and biochemistry and founding director of Montclair State University’s Sokol Institute for Pharmaceutical Life Sciences. “New treatment options are urgently needed.”

Siekierka’s current research focuses on targeting mechanisms that parasites use to escape destruction by host immune responses. He is studying two parasites: Leishmania, a single-celled organism introduced into humans by the bite of an infected sand fly, and Brugia malayi, a parasitic worm responsible for the disease lymphatic filariasis (elephantiasis) in tropical regions.

“This program has advanced to a new level with a greatly expanded scope,” Siekierka says. “Novel Celgene inhibitors are being used as lead structures that may become potentially new therapeutics for the treatment of human filariasis.”

“Leishmania infection results in skin lesions and can be fatal if not treated,” explains Siekierka, who has been targeting a specific Leishmania protein kinase with synthetic drugs. “Protein kinases are the cell’s switching machinery controlling many critical cellular processes. The Leishmania protein kinase under study is absolutely required for the parasite to survive in the host. The goal of this research is to design drugs that prevent this protein kinase from functioning, thereby preventing the parasite from surviving in the host.”

continued on next page
Preserving aquatic biodiversity

Professor Meiyin Wu is working to keep exotic species out of the world’s fresh and salt waters. Through her Great Lakes Restoration Initiative project, she is developing an innovative ultrasound technology that would eliminate microscopic organisms—as well as egg and larval stages of macro-organisms—from ship ballast water. Her work is being funded by the U.S. Department of the Interior with a $673,500 grant.

“Ships traveling around the world carry thousands of gallons of ballast water to maintain stability during their voyages,” Wu explains. “Sea water and marine creatures can be ballasted from a coastal port and be transported to the next destination of call, where the water may be deballasted along with the organisms it carries.”

Wu says species introduction is a leading cause of biodiversity loss. “Around the globe, exotic species are replacing native species and altering the ecosystems they invade.”

For the past eight years Wu, along with Junru Wu of the University of Vermont, has been working on BallastSolution, an innovative, environmentally sound device that combines filtration and ultrasonic technologies. (The scientists hold a U.S. patent on the technology, and are awaiting another on the design.) Also on the research team are postdoctoral researcher Di Chen and three students from Montclair State.

“BallastSolution can be the solution for millions of ship owners,” she says. “When directly encountered by aquatic organisms, ultrasound can form cavitation bubbles that damage/kill targeted harmful organisms without causing secondary environmental impacts.”

With the Brugia malayi parasite, Siekierka, along with his students, identified a protein kinase that the parasite needs to protect itself from stress and immune destruction. “We’ve been able to target this protein kinase with drugs that block its action in the worm. The end result is the worm cannot respond to the stress of the host immune response and quickly die.”

In May 2010, Montclair State University entered into a formal sponsored research agreement with the Celgene Corporation in Summit, New Jersey and Celgene Global Health (CGH). CGH collaborates with partners around the globe to find solutions for healthcare challenges in the developing world.

The agreement allows Siekierka to assess a collection of Celgene proprietary kinase inhibitors for activity against novel parasitic protein kinases identified through his research. “This program has advanced to a new level with a greatly expanded scope,” Siekierka says. “Novel Celgene inhibitors are being used as lead structures that may become potentially new therapeutics for the treatment of human filariasis.”

Sokol Professor of Chemistry David Rotella will be conducting medicinal chemistry initiatives to enhance the potency, selectivity, and metabolic stability of the Celgene inhibitors identified to date. With more than 20 years of experience in the field of medicinal chemistry, Rotella leads a team of chemists designing and synthesizing improved inhibitors that will be evaluated by Siekierka’s group. “This exciting endeavor represents an early stage drug discovery program at Montclair State University,” Siekierka says.

For more on the Sokol Institute, see page 6
**How language is acquired**

*Do the events infants see,* such as a ball being thrown or a dog running into a house, impact their language acquisition and what they ultimately think about the world? Professor Laura Lakusta of the Psychology Department is hoping to uncover the mystery.

“The overall goal of my research is to provide a theoretical framework for understanding how children construct a mapping between non-linguistic, conceptual representations of the world and linguistic structure, so they can talk about what they see,” she explains.

Currently there are two theories on the subject. “According to one view, the way in which infants perceive events closely reflects the semantic structures of language. When they learn language, children map or link concepts into these semantic structures,” Lakusta explains. “According to another view, the nature of infants’ event representations is very different from the semantic structures of language, and learning language shapes pre-linguistic thought.”

Lakusta will explore both theories. “The findings have implications for developmental cognitive psychology as well as linguistics, and will contribute to a more thorough characterization of cognitive and language development in typically developing children.”

Lakusta’s research is supported through several University grants and awards, and undergraduate and graduate students will assist her in all areas of the project.

“Current objective methods for assessing dietary intake require extensive clinical visits or subject confinement. “Both methods are expensive and not feasible for extended periods of time,” Thomas explains. Instead, she proposes an affordable, non-invasive, accurate method that uses mathematical models to monitor subject intake during weight loss. “We propose to meet this need through application of a validated energy balance model.”

Thomas believes the proposed model, developed in collaboration with a team of experienced obesity researchers and mathematicians, can change current practices for determining patient dietary adherence and provide vital information for understanding the obesity problem in the nation. Her research has received more than $300,000 in funding from the National Institutes of Health (NIH).
Promoting social change

Department of Broadcasting
Professor Beverly Peterson is using cross-digital platforms to position the documentary as an interactive tool for social change.

Throughout her career as an independent producer, Peterson has explored storytelling techniques that allow documentary to bring forward new perspectives on social issues. “The Internet and social media enable me to address an audience’s need for information in a creative way that is highly interactive,” she says.

Her latest project, “OurBullyPulpit.org,” allows visitors to view videos and access supplementary information whenever they have a question.

Peterson says that using the Internet enables viewers to tailor their experience to their interests and needs. She also uses social media to create dialogue and have viewers share their own experiences.

“The site has become a vital resource for advocates and legislators alike,” she notes.

According to Peterson, workplace bullying has taken a devastating toll on victims’ health and the cost of doing business. She has created a series of inter-connected websites that build on the narrative approach in a traditional documentary.

Virtual meeting place

The Creative Research Center (CRC) at Montclair State University is a virtual meeting place where creative thinkers from all disciplines can share ideas, spark conversations, and have access to resources at their fingertips.

The Center is led by Professor Neil Baldwin of the Department of Theatre and Dance, a widely published cultural historian and author of several books, including Henry Ford and the Jews and To All Gentleness: William Carlos Williams—The Doctor Poet. Baldwin says he was passionate about creating an online community where scholars, artists, and creative thinkers from all disciplines could gather virtually.

Launched in the spring of 2010 with the inspiration and support of College of the Arts Dean Geoffrey Newman, the CRC includes a variety of resources ranging from monthly essays, a virtual student center, and a web bibliography, to a “living document” of references and links to material on relevant issues. The CRC has a virtual advisory board with members as prominent as Janet Eilber, artistic director of The Martha Graham Center for Contemporary Dance in New York, and as far away as new media pioneer Gary Hall, professor at Coventry University in the United Kingdom.

Further information about the CRC can be accessed at montclair.edu/creativeresearch.
Eighty-five years ago a small group of Crow Indians from southeast Montana took a train to Los Angeles to attend healing services led by a famous Pentecostal pioneer. When the group returned to the reservation, one of its members began blending traditional Crow practices with those of the nascent American Pentecostal movement. The ministry thrived, and Crow Pentecostal churches began to grow throughout the reservation.

Last summer, Professor Mark Clatterbuck visited the Crow Reservation to explore the popular religious movement of Crow Pentecostalism. The professor of religion is one of only a few scholars researching what has become the most influential Christian movement on the reservation.

“What began in 1927 as a small band of Crow Foursquare Church converts has since become the most ubiquitous and influential Christian movement on the reservation, one that exerts enormous political, social, and religious influence on present day Crow tribal life,” he notes.

Clatterbuck’s research, “Real Indians Love Jesus: Anti-Nativism and the Reinvention of Tribal Identity among Crow Pentecostals Today,” points out that the movement has not been smooth or void of critics. While many Crow Pentecostal religious practices—

including healing prayer, fasting in the hills, and vision-questing—are rooted in the traditional Crow religion, Crow Pentecostals publicly condemn many of the traditional ceremonies and ways of worship. “Crow Pentecostals themselves have crafted an ingenious framework of religious identity whereby their embrace of Christianity and rejection of Crow traditionalism actually places them at the center of Crow tribal identity,” Clatterbuck says, “even as so-called tribal traditionalists are re-cast as the real indigenous outsiders.”

Clatterbuck recently received a grant from the Louisville Institute to expand his studies for a project, “Jesus at Crow: Case Studies in Native Religious Identity,” in which he will document the interreligious encounters taking place on the reservation between Christianity and Crow Traditionalism. The result will be a book based on his fieldwork that includes a video highlighting footage of Crow Christian worship and interviews with Crow religious practitioners. Helping Clatterbuck with his research will be a Crow interpreter, a videographer, and two student research assistants.
Margaret and Herman Sokol Institute for Pharmaceutical Life Sciences

The Sokol Institute sponsors a variety of research programs in pharmaceutical life sciences that affect human health, including programs promoting the study of disease mechanisms and therapeutic approaches for malaria and lymphatic filariasis.

The Institute also serves as a resource in the development of graduate and post-doctoral programs in pharmaceutical disciplines such as medicinal chemistry, biochemistry, and pharmacology.

With significant increases in the number of Montclair State students majoring in key drug development and research fields; recruitment of new faculty from top academic and industry institutions around the world; and the launch of significant research into such areas as neglected diseases, oncology, medicinal chemistry, and computational technologies, the Sokol Institute prepares a growing number of highly educated scientists, researchers, and technicians to contribute to the state’s $20 billion pharmaceutical industry.

More information: montclair.edu/sokolinstitute

Center for Research and Evaluation on Education and Human Services (CREEHS)

Housed under the auspices of the College of Education and Human Services, CREEHS conducts high-quality research and evaluation studies that address the most pressing issues in education and human services.

From developing research and evaluation plans to providing technical assistance and professional development, CREEHS is a valuable resource in the field. CREEHS has worked with the Paterson Public School District, Partners for Health, and currently is conducting a program evaluation of the Newark-Montclair Urban Teacher Residency Program.

More information: cehs.montclair.edu/academic/creehs

Center for Child Advocacy

The Center for Child Advocacy supports and educates child advocates throughout the state, administers grants, provides training, hosts national conferences and events, and offers academic programs that provide students with a multidisciplinary understanding of the role of the child advocate. The Center has received the support of the New Jersey Division of Youth and Family Services since 1999.

Michele Cascardi is a child advocacy and policy professor who has been a forensic and clinical psychologist for the past 15 years. Her research focuses on three areas: anti-bullying laws and policies, post-traumatic stress disorder, and adolescents’ formation of dating relationships.

More information: chss.montclair.edu/chad/aboutus

Center for Autism and Early Childhood Mental Health

The newly created Center for Autism and Early Childhood Mental Health provides professional development, education, clinical services, and research related to the issues of autism, infant and childhood development, and mental health. The Center’s director, Gerard Costa—a widely respected expert in the field—notes that “The Center is anchored in a developmental approach to meeting the needs of infants, children, adolescents and their families, supported by theoretical education, research-based methods and clinical application.”

More information: cehs.montclair.edu/academic/ca

This issue highlights four of Montclair State University’s many centers and institutes:
Assessing auditing firms

Bigger is not necessarily better when it comes to auditing firms for private companies in the public acquisition market.

A recent study by James DiGabriele of the Department of Accounting, Law, and Taxation rebuts previous research that brand name auditors provide higher assurance and credibility to the audited financial statements of companies with little or no trading history.

DiGabriele explains that private sellers often attempt to achieve parity with public targets in the acquisition market to maximize sales price. Past research indicates that private sellers who engage a larger audit firm will create the perception of a higher level of assurance, quality, and credibility.

The results of DiGabriele’s study, however, indicated that the price of a privately held company did not vary as a function of the audit firm performing the audit.

“The study provides evidence that auditor reputation and perceived audit quality in the acquisition of private companies does not increase the sale price of comparable private markets,” DiGabriele explains.

Insights into adolescent psychology

John spreads a rumor about a classmate. Emily invites all but one girl in the class to her party. Sara Goldstein, an associate professor of Family and Child Studies, says that knowing more about these and other instances of relational aggression can offer valuable insights into youth and adolescent psychology.

“...from a very young age, and continuously through early adolescence, youth perceive at least some forms of relational aggression to be less wrong than physical aggression.”

“Historically, research on aggression has emphasized physical forms of aggressive behavior,” she explains. “Less is known about the ways in which social and psychological factors relate to other forms of aggressive behavior, such as relational aggression.”

Working with Marie Tisak of the Psychology Department at Bowling Green State University, Goldstein explored young people’s social reasoning in regard to relational aggression. “We examined whether youth view relational aggression as a behavior that is generally harmful and wrong, or if they viewed it more as a personal choice, since it involves the selection of friends and other social behaviors,” she explains.

“Relational aggression, like physical aggression, is associated with psychosocial consequences for the victims, perpetrators, and even witnesses,” she says. “Yet from a very young age, and continuously through early adolescence, youth perceive at least some forms of relational aggression to be less wrong than physical aggression.”

Other areas of her research explore parents’ roles in managing relational aggression as well as the role jealousy and social anxiety play in adolescents’ experiences with relational aggression.

Goldstein’s work has been published in the Journal of Early Adolescence, the Journal of Genetic Psychology, and the Journal of Child and Family Studies.
Retail marketers are hungry for data that will give them deeper insights into consumers’ shopping habits in an omni-channel world.

Professor Patrali Chatterjee’s research, “Multiple-Channel and Cross-Channel Shopping Behavior: Role of Consumer Shopping Orientations,” found that high-thrift customers patronizing a cross-channel retailer are less likely to search for competitive offerings than customers patronizing a multiple-channel retailer. Cross-channel retail strategy acts as a simple signal of competitive or “best” price to consumers. For retailers, these findings provide valuable insight into consumer behavior that could have a significant impact on their bottom lines. Multiple-channel retailers operate various channels as separate entities (i.e. order and pick up in-store; order online or by telephone and have product delivered), while cross-channel retailers integrate channels by moving products, money, and information across channels (i.e. order online and pick up in-store; order in-store and have product delivered).

Using multiple data sources, Chatterjee examined the benefits and costs inherent in channels, the influence of consumer shopping orientations on cross-channel usage, and the differential impact of a retailer’s cross-channel strategy on purchase outcomes.

In addition to finding that customers of cross-channel retailers are less likely to search for competitive prices, the study also revealed that retailer satisfaction is higher for cross-channel retailers compared to multi-channel ones no matter which transaction channel was used by consumers.

Chatterjee’s research was an invited presentation last year at the Payment Innovation Institute at Harvard University.