

Genocea Biosciences and PATH sign collaboration agreement to accelerate pneumococcus vaccine development

Press release

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Genocea teams with pneumococcus expert Richard Malley of Children's Hospital Boston

Cambridge, MA and Seattle, WA, June 5, 2008—In advance of a major international symposium on pneumonia next week, Genocea Biosciences, a leading vaccine discovery and development company, today announced a research and collaboration agreement with PATH to speed the development of a new vaccine to fight *Streptococcus pneumoniae*. PATH is pursuing a number of approaches to develop pneumococcal vaccines that will be effective and affordable in the countries that most urgently need them. PATH, Genocea, and Richard Malley, M.D., associate professor of Pediatrics at Children's Hospital Boston, will collaborate on a protein-subunit pneumococcal vaccine for use in the developing world. Dr. Malley is one of the world leaders in immune mechanisms of protection against pneumococcus and is also principal investigator of a 2006 PATH-supported project to develop a whole-cell pneumococcal vaccine for children in the developing world.

"This collaboration is an example of how nonprofit organizations can work with the private sector to further research that can save millions of lives," says Dr. Mark Alderson, Director, PATH's Pneumococcal Vaccine Project. "Genocea's novel antigen discovery platform technology is designed to identify pneumococcal antigens recognized by critical immune system cells. This technology is an exciting breakthrough in the understanding of cellular immunology that could help PATH identify potential new vaccines in the fight against pneumococcus." In particular, this approach could help with development of "common protein" vaccines. Vaccines containing proteins that are common to all pneumococcus serotypes could provide broad protection to children worldwide.

"While current pneumococcal vaccines are highly effective in preventing morbidity and mortality due to pneumococcal disease, it is critical to pursue new vaccines," says Dr. Malley. "Because bacteria continue to evolve, we need to have new discovery tools like Genocea's available. New vaccines could offer expanded protection and additional choices to meet the needs of impoverished children. This collaborative research effort represents a very important step in this direction."

Worldwide, *Streptococcus pneumoniae*, also known as pneumococcus, is the leading cause of death for children less than the age of five. It is estimated that more than 150 million episodes of pneumonia occur every year among children less than five in developing countries, accounting for more than 95 per cent of all new cases worldwide. Between 11 million and 20 million children with pneumonia will require hospitalization and more than 2 million will die from the disease. Of these, 1.2 million are estimated to be caused by the pneumococcus. This bacterium can also cause meningitis (brain infection and inflammation), acute otitis media (middle ear infections that can lead to a child becoming deaf), blood stream infections (bacteremia), and sinus infections.

Vaccines already do exist for some types of pneumococcal disease. For infants and young children, the currently licensed seven-valent vaccine manufactured by Wyeth, Prevnar®, is a conjugate-based vaccine. Prevnar® covers 7 of the 80 most common strains of *Streptococcus pneumoniae*. This vaccine has virtually eliminated the strains of pneumococcus which it covers in the developed countries that have

adopted its use. However, additional vaccines are ultimately needed to expand protection for children in low-income countries, where most pneumococcus deaths occur.

“Genocea is proud to partner with PATH to accelerate vaccine development for developing countries,” says Robert Paull, co-founder & President of Genocea. “Genocea believes it is important to address both the needs of the developed world and geographies where poverty, socio-economic challenges, and disease prevalence require public/private partnerships to bring innovative approaches to help those most in need.”

PATH, Genocea, and Dr. Malley are all participating in the 6th International Symposium on Pneumococci & Pneumococcal Diseases, occurring June 8-12 in Reykjavik, Iceland. Leading scientists from around the world are gathering to share research on global disease burden, effectiveness of current treatments and vaccines, and development of the next generation of vaccines.

Founded in 2006, Genocea is focused on identifying antigens for the next generation of novel vaccines. By recreating the human immune system *in vitro*, Genocea can identify which antigenic epitopes will elicit a competent immune response. Genocea is based on technology developed from University of California at Berkeley and Harvard Medical School. The company has assembled a world-class team of vaccine experts from Wyeth Vaccines, Merck Vaccines, CSL Ltd., GlaxoSmithKline, Avant Immunotherapeutics, the US National Institutes of Health, and the US Food and Drug Administration.

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About Genocea Biosciences

Genocea Biosciences is commercializing key breakthroughs in vaccine discovery and development. Genocea can rapidly identify antigens that result in the *in vivo* stimulation of protective CD8⁺ and CD4⁺ T cells, targets that can be immediately incorporated into existing antigen delivery systems to produce multivalent vaccine formulations that have the highest probability of generating protective cell-mediated immunity. Genocea is backed by leading venture capital firms Lux Capital Management and Polaris Venture Partners. Visit www.genocea.com for more information.

About PATH

PATH is an international, nonprofit organization that creates sustainable, culturally relevant solutions, enabling communities worldwide to break longstanding cycles of poor health. By collaborating with diverse public- and private-sector partners, PATH helps provide appropriate health technologies and vital strategies that change the way people think and act. PATH's work improves global health and well-being. For more information, visit www.path.org.

About Children's Hospital Boston

Children's Hospital Boston is home to the world's largest research enterprise based at a pediatric medical center, where its discoveries have benefited both children and adults since 1869. More than 500 scientists, including eight members of the National Academy of Sciences, 11 members of the Institute of Medicine and 12 members of the Howard Hughes Medical Institute comprise Children's research community. Founded as a 20-bed hospital for children, Children's Hospital Boston today is a 397-bed comprehensive center for pediatric and adolescent health care grounded in the values of excellence in patient care and sensitivity to the complex needs and diversity of children and families. Children's also is the primary pediatric teaching affiliate of Harvard Medical School. For more information about the hospital and its research visit: www.childrenshospital.org/newsroom.