Richard Schlegel is a pioneer in human papillomavirus (HPV) research. Schlegel, chairman of the Department of Pathology at Georgetown University Medical Center, has long studied the protein shell surrounding HPV. His work led to the development of a vaccine called Cervarix, currently in clinical trials. The trouble with Cervarix is that it is solely preventative, not therapeutic, and is difficult to transport because it must be kept frozen. Now, with the help of a new award from the Bill & Melinda Gates Foundation and the NIH, Schlegel’s stellar team has 3.5 million dollars to create the next generation HPV vaccine, which will be both preventative and therapeutic, can be produced inexpensively in bacteria, and can be shipped in powder form and reconstituted simply with water to be used in developing countries all over the world.

Schlegel spoke to the JCI about this award, the link between HPV and cervical cancer, and what he hopes to accomplish.

**JCI**: Why is HPV so prevalent among women?

Schlegel: HPV is transmitted sexually and infects both men and women. While there appears to be no preferential infection of women, women are prone to developing cancer following infection, which most likely reflects differences in the tissues that are infected. The “transition zone” of the cervix is the most susceptible to cancer.

**JCI**: How did you get interested in this field?

Schlegel: I became interested in viral oncology when I was working as a postdoctoral fellow with Tom Benjamin at Harvard University. Afterward, I moved to the NIH and worked with Peter Howley on the bovine papillomavirus, and soon it was discovered that there were human papillomaviruses which were associated with cervical cancer.

**JCI**: How were you selected for this award?

Schlegel: I lead one of four research centers collaborating to develop a prophylactic and therapeutic vaccine for the human papillomaviruses and cervical cancer. The research groups are based in the University of Colorado Health Sciences Center, the German National Cancer Center, the Ludwig Cancer Center in Brazil, and Georgetown. The Gates Foundation announced a competition for researchers to respond to critical issues of global health. They received 1,700 proposals and used a panel to assess the scientific basis and health impact of the proposals.

**JCI**: How do you coordinate this international research effort?

Schlegel: The research is administratively coordinated at the University of Colorado by Dr. Robert Garcea who serves as the principal investigator. I have worked with several of the investigators before, and we have been very successful using the internet, phone calls, and meetings to coordinate our efforts. We also have travel support as part of our grant so we can meet regularly.

**JCI**: What sort of timeline do you envision with regards to creating a safe and effective HPV vaccine?

Schlegel: A safe, effective, prophylactic vaccine will be marketed within 1–2 years. However, the second-generation prophylactic/therapeutic vaccine we are working on would not be available for another 7–10 years.
years, assuming that it was highly effective.

JCI: What is your typical day like?

Schlegel: I usually get to work around 7 AM so I have about 2 hours to read, write, and think before the rest of the lab arrives. After that, I mainly respond to research and administrative issues. In general, I work after dinner on the internet to screen the literature relevant to our research.

JCI: What do you consider to be your greatest scientific accomplishment?

Schlegel: From a clinical perspective, I think my most significant accomplishment has been contributing to the development of a vaccine that will have a significant positive impact on world health. From a basic science standpoint, I have been most satisfied with our studies of the mechanism by which the E5 oncoprotein alters cell growth by modifying the activity of the cellular V-ATPase.

JCI: What about your greatest life accomplishment?

Schlegel: Overall, my greatest satisfaction is having sufficient time to raise and enjoy a wonderful family.

JCI: By the time this money runs out, what do you hope to have achieved?

Schlegel: Our greatest excitement would come if we could produce an inexpensive, stable HPV vaccine that could be used on patients before and after infection.

Stacie Bloom