

Bcc Vac

A Prophylactic Vaccine against lung infections in people with Cystic Fibrosis

Product Offering

Researchers from Institute of Technology Tallaght have developed a new vaccine to protect cystic fibrosis and other vulnerable patients against Burkholderia cepacia complex (Bcc), a highly antibiotic resistant pathogen that invades the lung epithelium and escapes beyond the lung.



Advantages

- **Novel Solution:** This innovation addresses an unmet clinical need as there are currently no available prophylactic vaccines for Bcc nor are there any vaccines currently in human trials. Therapeutic options are also limited and of low efficacy.
- **Effectiveness:** Bcc Vac should be more effective than current approaches that rely on high doses of antibiotics to combat infections. Such approaches are ineffective as Bcc is highly resistant to antibiotics and has the ability to utilise certain antibiotics as a nutrient source.
- **Reduced Healthcare Costs:** Bcc Vac should prevent patients, healthcare providers and insurance companies from incurring the considerable costs associated with repeated hospitalisation and expensive high dose antibiotics for a patient colonised with Bcc.
- **Patient Safety:** Antimicrobial resistance, potential kidney damage and hearing loss following long term antibiotic treatment can further impair patient quality of life, in addition to the added costs of treating these healthcare issues. Vaccination is a safer alternative for patients.

Industrial Applications

The vaccine aims to protect people with Cystic Fibrosis, chronic granulomatous disease patients and other vulnerable populations. This pathogen is causing increasing concern beyond CF patients.

The vaccination could also be a potential treatment for Glanders, a closely related infectious disease contracted primarily by horses, mules and donkeys through ingestion of contaminated food or water.

Commercial Opportunity

We are seeking a commercial partner within the healthcare or biopharmaceutical sector to optimise the manufacturing and purification process of the Bcc vaccine and take it to market. The Bcc pathogen is causing increasing concern beyond CF sufferers giving it strong use potential amongst other patients and species. It is envisaged that patients, government health departments and health insurance companies will pay for the vaccine. The vaccine market in general is growing due to the intense use of antibiotics resulting in a growing resistance to antibiotic treatment. The development of new vaccines is a promising solution to these issues for a wide range of infectious diseases. We offer flexible commercial terms to licensees on technologies developed through ITTD research.

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Stage of Development

The two antigens comprising BccVac have been tested in mice and demonstrated excellent efficacy as protective vaccines against Bcc when mice were subsequently challenged with the bacteria. The project has received support and validation from a clinical, technical and commercial perspective. This innovation is patent-pending.

Project Team and Collaborators

The project team at the Centre of Microbial Host Interactions has been studying the interactions between the bacteria and human lung cells since 2003 in an effort to develop novel therapeutics to eliminate infections in vulnerable hosts. The group focuses on pathogens which cause chronic infection in cystic fibrosis (CF) patients. CF is a genetic recessive disorder resulting in poor clearance of bacteria from the airways. Chronic opportunistic infections in these patients contribute to lung function decline. The infections are caused by a range of bacterial pathogens each with their own virulence features and all highly resistant to antimicrobial therapy.

The Principal Investigators in the Centre of Microbial Host Interactions are Dr Siobhán McClean, Dr Máire Callaghan and Dr Emma Caraher. The team includes eight PhD students and a post doctoral researcher.

Dr McClean developed Bcc Vac together with a PhD student, Minu Shinoy. Dr McClean has 20 years post-doctoral research experience. She spent five years in the Pharmaceutical industry prior to joining ITT Dublin, where she worked on oral drug delivery and vaccine development projects.

Dr Karen English, NUI Maynooth, is a key collaborator in the future development of the Bcc Vac project. Dr English has considerable experience in developing vaccination models against respiratory infections.



Intellectual Property

To protect the intellectual property associated with this technology, a patent has been filed with the European patent office.

Next Steps

If you would like to learn more about this technology or discuss commercial opportunities, please contact:

Paul Maguire, Licensing Executive, DIT Hothouse
on 01 402 7002 or email paul.maguire@dit.ie

  <p>where business meets innovation</p>	<p>DIT Hothouse is the award winning Innovation and Technology Transfer Centre based in Dublin Institute of Technology. Hothouse leads the consortium responsible for commercialising research from DIT, IT Tallaght, IT Blanchardstown, IADT and National College of Ireland.</p> <p>Hothouse draws in entrepreneurial and academic talent, ignites creativity and provides a dynamic environment to fast-track businesses and technologies to commercial success.</p>
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