

Meet...

a researcher of hearing and cochlear implants

Kate Hough, University of Southampton, discusses her study of hearing and cochlear implants

For the past nine years, I have been learning about, and researching, cochlear implants and hearing loss – both the intricate biology of hearing and how the body interacts with cochlear implants **and** the real-world lived experience of people living with hearing loss or deafness.

Cochlear implants can be a life-changing intervention for

people with severe to profound hearing loss. During surgery, a thin wire, the array, is inserted into the inner ear (cochlea). Inside the cochlea, electrical signals from the array excite the hearing nerve which sends signals to the brain where they are 'heard'.

We do not know why, but some people have poor hearing with their cochlear implant. A history of middle ear inflammation or infections can affect hearing with a cochlear implant. Exactly how is not known. Studies in animals show that it may be because inflammation and infection alters how immune cells in the cochlea behave after surgery. If this is correct, it may be possible to target these cells before implantation to improve hearing.

To investigate whether inflammation in the ear at the time of cochlear implantation plays a role in how well children and young people hear with their implants over time, I am working on a study called CHIEF (cochlear implants and inner ear inflammation). For CHIEF, which is led by Professor Tracey Newman, we are collaborating with surgeons at Manchester University Hospital. We are asking children and young people who are receiving cochlear implants in Manchester if they are happy to be recruited into the study. If they agree to take part, the surgeons will collect samples from their ear during their surgery. We will investigate these samples in the lab to look for signs of inflammation in the tissue. We will analyse the hearing and speech test data, for five years after surgery. Our aim is to see if there are links between inflammation in the ear, at the time of surgery, and how well children and young people hear with their implants over time.

Alongside my research, I co-lead a patient and public involvement and engagement (PPIE) group for people with lived experience of hearing loss and deafness called ALL_EARS@UoS. PPIE centres around researchers and people with lived experience, building a partnership and



working together to ensure research is relevant, translational, and high quality. It is important that we take the time to find out from the people that our research might affect what they think is important. And learn from their unique lived experience.

We have built a group of around 60 enthusiastic people with diverse backgrounds who work with us. Group members help develop research ideas, comment on grant applications, run activities to raise awareness to the public and contribute to writing research papers. Check out our website to find out about what we have been doing together over the last 3+ years (<https://generic.wordpress.soton.ac.uk/all-ears/>). We use community engagement as a way to raise awareness of hearing and cochlear implants and to encourage members of the local community to get involved with research and join our group. This involves visiting local community groups and getting involved with the group's activities; and over time, and repeated visits, building trust.

This year we launched a Young People's Advisory Group for people aged 14–16 years old with lived experience of deafness. We want to ensure that we are involving the voice of young people in our research. We are currently looking for young people to join the group. If you know anyone who might be interested, please get in touch via email k.l.hough@soton.ac.uk

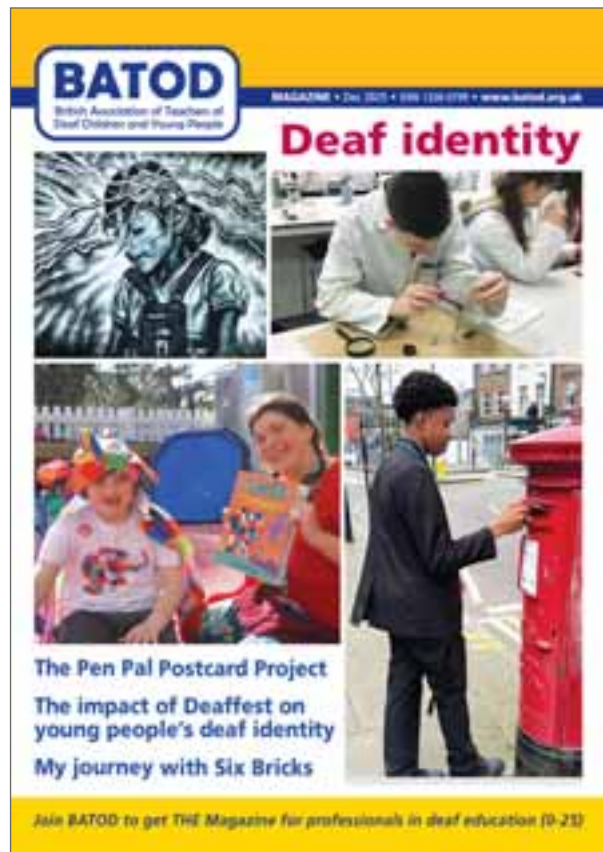


Kate Hough is a Research Fellow in Neuroimmunology from the University of Southampton.

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