

# Astronomers predict the future health of unborn babies

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Astrophysicists at the University of Sussex are using their statistical expertise to help save the lives of unborn babies.

Professor Andrew Liddle, Dr Rich Savage Dr Seb Oliver, Dr Pia Mukherjee and Dr David Parkinson are working with data from a recent clinical study of premature infants at Leeds Infirmary to spot genetic and demographic factors that may increase the risk of conditions such as chronic lung disease.

They will then use this information to build a statistical model that can be used to predict at-risk pregnancies, which will lead to doctors being able to apply pre-emptive treatment to reduce or prevent the conditions.

The joint project, which is funded by a Scientific and Technology Facilities Council grant, came about after Dr Savage was contacted by Professor Malcolm Levene, project co-investigator at Leeds Infirmary who personally knows Dr Savage.

Dr Savage says: "Astrophysicists have to use very advanced statistical techniques because we work with such difficult data. We analyse light from distant galaxies, which is often extremely faint. Because these techniques are so powerful, there are often other contexts in which they can be useful.

"The data in this case are so complex because the diseases can be caused by complicated and often subtle combinations of different factors. For

example, if one smokes and is a certain age and has a certain set of genes then a given disease might be likely, but all three must be true. In this case, there'd be no single test one could do to determine the risk."

The Sussex scientists are using Bayesian statistical classification techniques to predict the predisposition of mother-baby pairs to four major disorders of prematurity (periventricular leukomalacia, chronic lung disease, retinopathy of prematurity and necrotizing enterocolitis) leading to permanent disability in later life. "Bayesian" refers to a particular type of statistics that can be particularly flexible for combining all pertinent information into a single analysis to get the best possible results.

Source: University of Sussex

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