

Monday 12 March 2018 7.30pm

12 / 03 / 18

RNCM



8<sup>3</sup>

8<sup>3</sup> NEW MUSIC & SCIENCE PROGRAMME

Monday 12 March 2018 7.30pm

8<sup>3</sup>

## NEW MUSIC & SCIENCE

[www.rncm.ac.uk/prism](http://www.rncm.ac.uk/prism)

RNCM



**Patron** Her Majesty The Queen  
**President** Sir John Tomlinson CBE  
**Principal** Professor Linda Merrick  
**Chairman** Nick Prettejohn

To enhance everyone's experience of this event please try to stifle coughs and sneezes, avoid unwrapping sweets during the performance and switch off mobile phones, pagers and digital alarms. Please do not take photographs or video in the venue. Latecomers will not be admitted until a suitable break in the programme, or at the first interval, whichever is the more appropriate.

The RNCM reserves the right to change artists and/or programmes as necessary.  
The RNCM reserves the right of admission.



# Welcome

## **Dr Sam Illingworth, Senior Lecturer in Science Communication, Manchester Metropolitan University**

Tonight represents the first public performance arising from a series of collaborations between 8 composers and 8 performers from the Royal Northern College of Music (RNCM) with 8 STEM (Science, Technology, Engineering, and Maths) researchers from Manchester Metropolitan University (MMU). By working together in a genuinely collaborative process these composers, performers, and researchers have demonstrated how collaborations between the two institutes need not result in 'the science of music' or 'the music of science', but rather an interdisciplinary exploration of the liminal spaces between. We hope that you enjoy the results, and also that you are able to participate in the experiment yourself by filling in the questionnaires, which will be used as part of a long-term study into the effectiveness of interdisciplinary collaborations.

## **Dr Michelle Phillips, Lecturer in Music, RNCM**

The idea for this project originated in a discussion around notions of communication in science and art: how can researchers share cutting edge scientific research with new audiences, in new creative ways? How can music communicate these ideas, and also use these as an effective motivation for new modes of creativity? Finally, to what extent can the work of researchers and composers benefit from engagement with the other's discipline, and new ways of working and thinking about science and music emerge through such collaboration? We're excited about the results of this project, and looking forward to hearing these with you tonight. All performers, musicians, and academics involved in the project have documented their experiences of the project at various milestones and we would be very grateful if you would be happy to be part of this research by filling in the questionnaire included.

## **Dr Emily Howard, Director PRiSM and Senior Lecturer in Composition, RNCM**

PRiSM brings together researchers and practitioners through establishing and nurturing creative collaborations between the sciences and music and we are thrilled that *New Music & Science*, the RNCM's first PRiSM Collaboration with MMU, is proving to be such a brilliant example of this mission in practice. The collaboration, which gives RNCM students in composition and performance the welcome opportunity to work closely with MMU research scientists, also enables a social science study led jointly by researchers Dr Michelle Phillips (RNCM) and Dr Sam Illingworth (MMU), to evolve in tandem.

Following the huge success of the PRiSM launch last season, we are delighted to be presenting our second PRiSM event during British Science Week: **8<sup>3</sup>** showcases the world premieres of eight diverse newly composed works, each a response to an area of current scientific research, each a reaction to an exchange of ideas between composers, performers and scientists.

Emily, Michelle and Sam would like to thank everyone involved in making this event happen, and in particular, the eight scientists from Manchester Metropolitan University and the RNCM's exceptionally talented student composers and performers.

## dBA (LOUD)



**Stephen Bradshaw** *composer*  
**Dr Graeme Heyes** *scientist*

**Sean Rogan** *guitar*  
**Aidan Marsden** *percussion*  
**Simeon Evans** *saxophone*  
**Callum Coomber** *actor*

Although advances in aircraft design have made planes become significantly quieter over recent decades, growth in air traffic movements, and other factors, have seen complaints regarding aircraft noise increase. This is important as airport noise can cause significant impacts to the quality of life of airport communities. For example, to health and education.

Airport operators go to great lengths to engage with local communities about noise and to communicate the interventions they make to reduce noise impact, however they face significant challenges in doing so - often resulting in thousands of noise complaints per year.

Our response dramatises some aspects of this complex process, such as the noise abatement procedures put into place by airports, increases in the number of flights, and the annoyance felt by local communities.

Earplugs are provided.

## Three Colonisations



**Michael Brailey** *composer*  
**Professor Joanna Verran** *scientist*

**Stephen Bradshaw** *violin*  
**Simeon Evans** *tenor sax*  
**Aidan Marsden** *percussion*

When microorganisms attach to a surface, if they are able to grow, the surface may be colonised. The type of surface can greatly affect the success of colonisation; for example, a smooth surface is easier to clean, but a surface with many defects can retain microorganisms. If a surface is left unsterilized, these microorganisms may grow into complex structures and interrelated communities called 'Biofilms'.

In this piece, three instrumentalists carry out three separate, insular explorations of musical 'surfaces' - sustained sounds or prolonged gestures of varying instability. During the performance, they receive a delayed live audio-feed through their headphones of themselves performing. They must emulate this signal as closely as possible, causing the music to grow organically out of mistake, omission and accidental addition, akin to microbial replication. These mutations, in-turn, are re-recorded and re-emulated, generating considerable, unpredictable variation as the piece continues.

Concurrently, freely-chosen microbial cells of music are introduced on top of this process, disrupting the static 'surfaces' and causing both microbe and surface to evolve over time. Depending on certain variables including the level of accidental mutation and the cells chosen by the performers, the instrumentalists will culture forever-growing, bespoke musical biofilms from written and heard notation.

## offset iii – etude

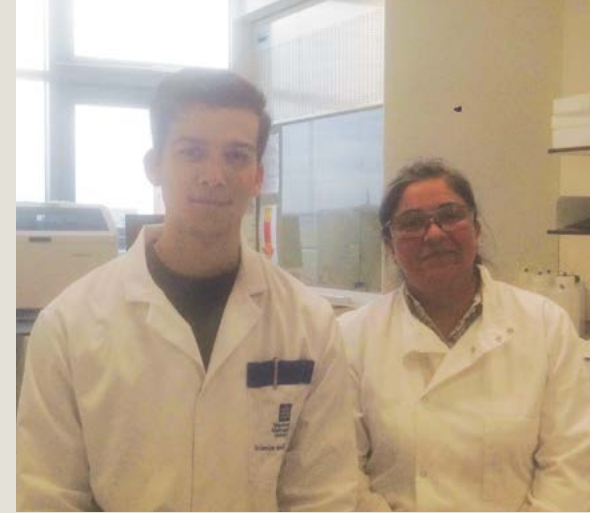


**Bofan Ma** *composer*  
**Dr Keeley Crockett** *scientist*

**Hannah Boxall** *voice*  
**Simeon Evans** *saxophone*  
**William Graham** *percussion*  
**Aaron Breeze** *piano*

Despite all the differences in vocabulary and methodologies, both our current researches tend to explore the nuances between different types of expressions that could easily be neglected. The project is centred around a presumption where a live musical performance is somehow similar to a border crossing scenario. That said, the audible (sound) and the visible (performance physicality) can also be paired with the verbal and the non-verbal. And whilst the non-verbal affects the credibility of the verbal; the visible also changes the way the audible is eventually delivered. Hence plenty of contradictory information is projected throughout the piece, and an enhancement of the interactions between different parameters is also evident. As a pilot experiment, this piece will undoubtedly enact further overlaps between our research methodologies. We will then formulate a sequence of extended studies where AI can potentially be involved within a musical context.

## Tissue Engineering



**Dennis Tjiok** *composer*  
**Dr Araida Hidalgo-Bastida** *scientist*

**Robert Smith** *oboe*  
**Sean Rogan** *guitar*  
**William Graham** *drums*

At our first meeting in the laboratories at Manchester Metropolitan University, we talked about methods of tissue engineering and what processes it involves. It has been important to see that a wide range of different professionals is required for the undertaking. For the composition, this also asked to further investigate in problems that scientists attempt to solve by research in tissue engineering. Injuries, diseases and health care and regeneration inspired musical themes such as fracture, healing and personal connection to the relevant topic. Therefore, we decided on theatrical elements such as speech to introduce non-musical dimensions to the three performers. Each of them would tell an individual story, emphasizing the importance of research in health care.

## Ma(Ris)Ma



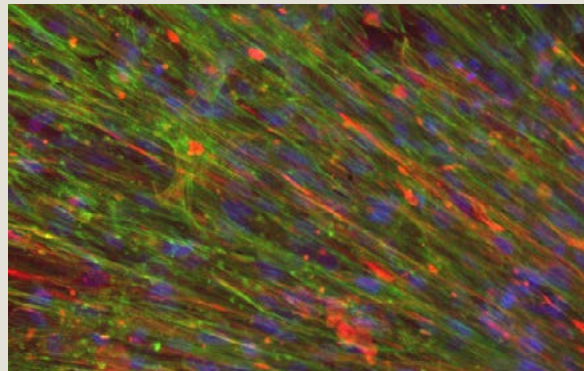
**Isabel Benito-Gutierrez** *composer*  
**Dr Hannah Mossman** *scientist*

**Stephen Bradshaw** *violin*  
**Aaron Breeze** *piano*  
**William Graham** *drums*  
**Rita Castro Blanco** *conductor*

Saltmarshes are important habitats for wildlife, and they also protect coastlines from erosion and storms. Hannah Mossman's research involves restoring lands that used to be saltmarshes. In the past salt marshes have been reclaimed to make farmland or towns, so governments and charities are trying to create new saltmarshes. Unfortunately, it has been found that the new, restored salt marshes do not have the same plants as natural ones. Restored salt marshes are flatter than the naturally bumpy natural marsh.

When Hannah explained to Isabel the nature of her research on saltmarshes, they decided to create a piece which reflects this process from natural saltmarshes - flat/restored saltmarshes - recovered saltmarshes. In that way, the structure of the piece is A - B - A, where A is a richer texture with many more sources of sounds and rhythms while B is a more flat and static section. Also, the title of the piece shows this ternary form. "Marisma" means saltmarsh in Spanish, "Ma" is the A sections and "ris" the middle B section. As saltmarshes were abruptly changed into farmland the transition from A to B is more aggressive and sudden while, B to A has a more gradual direction as the process to recovering saltmarshes is also happening more moderately.

## Rennervate



**Zakiya Leeming** *composer*  
**Dr Kirstie Andrews** *scientist*

**Aaron Breeze** *piano/keyboards*  
**Simeon Evans** *saxophones*  
**Aidan Marsden** *percussion*  
**Robert Smith** *oboe*

*Rennervate* musically depicts the research Kirstie Andrews has been performing in growing nerve cells on artificial scaffolds. In a programmatic way, the piece depicts Kirstie's progress through her research. The first section opens with Kirstie's familiarisation with the existing research. This research was theoretical and hypothesised that the best scaffolds would be highly structured in road-like channels. As depicted in the music however, these rigid scaffolds (piano and marimba) do not encourage sustained growth (oboe and saxophone struggle to create a 'line'). The piece then depicts Kirstie examining what happens naturally during the growth of cells. This music is freer and less rigid, depicting the slightly 'erratic' growth under normal conditions that nevertheless eventually creates a network and allows signals to be carried through. The 'scaffold' (piano and marimba) 'follow along' and try to emulate some of this non-directional' growth. 'Signals' are eventually able to be passed between the instruments (insistent repetitions of one or two pitches at a time). The next section of the piece shows two different 'scaffold' conditions that Kirstie had tested. The 'directionality' is increased whilst still conforming to an overall looping pattern. This was found to be the best scaffold upon which nerve cells grew, and the piece ends with the hypothetical 'signal' being passed to symbolise success in functional growth.



## HIVE



**Rob Oswell (Smith)** *composer*  
**Dr Jenny Rowntree** *scientist*

**Simeon Evans** *saxophone*  
**Sean Rogan** *guitar*  
**Aidan Marsden** *percussion*

After two initial meetings and communications via email, we came to realise what we both wanted to achieve in this project. Our primary concern was the representation of ecological variation in a musical form, thereby opening a new perspective on practices well established within the scientific community. There were two methods by which the graphical outputs from the honeybee project were used to create source material for the composition. Firstly, several sessions in which the performers were asked to improvise based on the shapes of the graphs. Secondly, the direct 'sonification' of the graphs by putting musical parameters on the axis. Variation is thereby represented by the working of these two groups of materials into a dense 'HIVE' structure, where each line has a knock-on effect on another.

The brief for this to be a truly interdisciplinary project, with a two-way interchange between music and science, was a challenge. Initially it was hard to envisage how the collaboration might inform the scientific process, until Jenny realised that the sounds of a hive could be used as a potential indicator of colony health. The question remains as to whether this project has revealed new areas of scientific and musical exploration.

## Sea Lion Motion



**Jingyu Chen** *composer*  
**Dr Robyn Grant** *scientist*

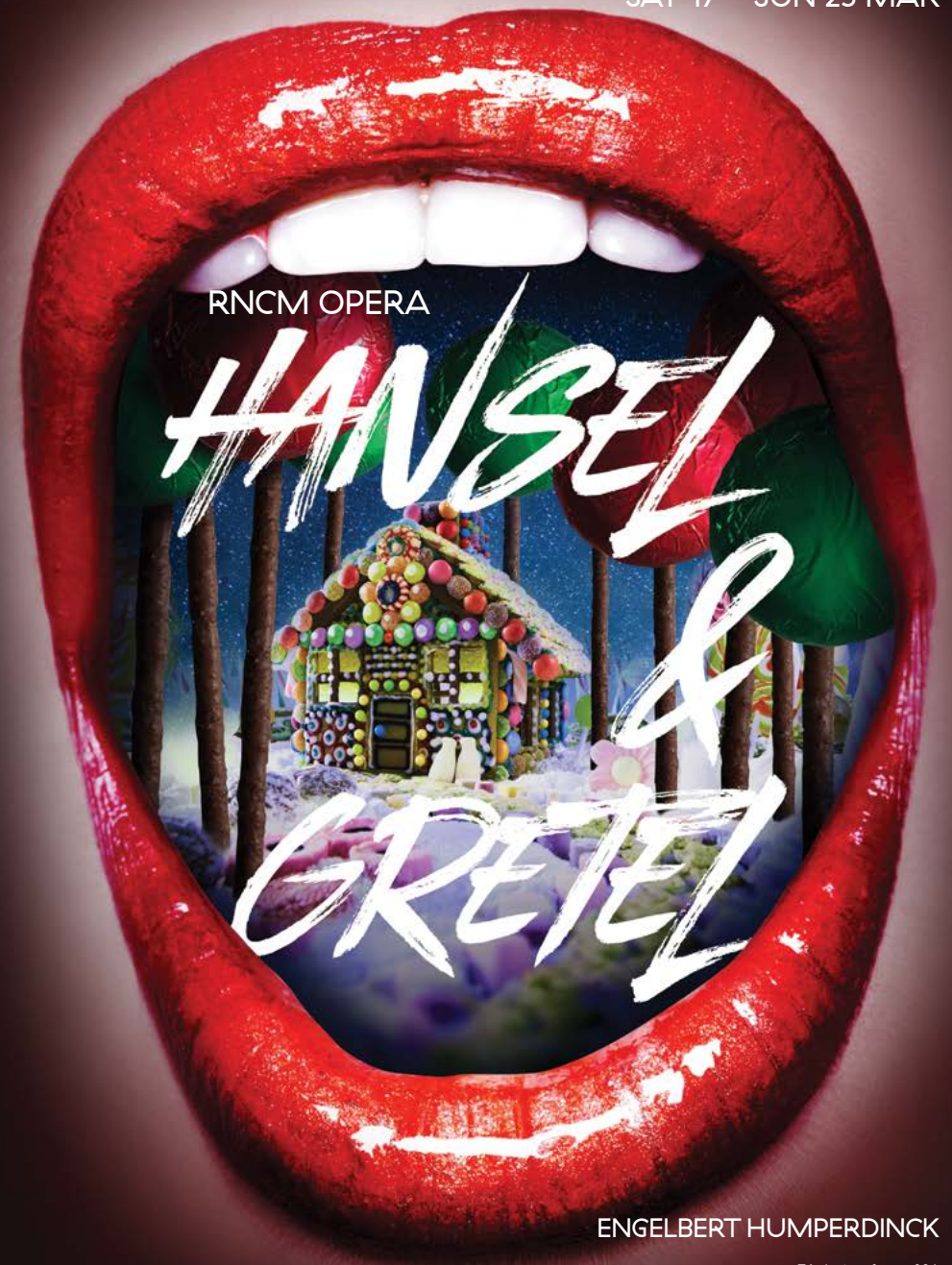
**Robert Smith** *oboe*  
**Stephen Bradshaw** *violin*  
**Aidan Marsden** *percussion*

Through this collaboration, I've been very excited to discover that my compositions can be helpful to scientific research. During my conversations with Robyn, I found out that sea lions might behave differently in response to different kinds of music - they may even dance! Therefore, to test this, I first worked on the rhythmic elements in my piece, creating three different speeds so that we could see if the sea lion would bob her head in different ways. The final composition 'Sea Lion Motion' for oboe, violin and percussion, is an artistically free response to the three rhythmically different areas in the sea lion study.

Further information about the PRISM Collaboration New Music & Science can be found here:

[www.rncm.ac.uk/research/research-centres-rncm/prism/collaborations/new-music-science/](http://www.rncm.ac.uk/research/research-centres-rncm/prism/collaborations/new-music-science/)

SAT 17 – SUN 25 MAR



RNCM OPERA

# HANSEL & GRETEL

ENGELBERT HUMPERDINCK

Tickets from £21

BOX OFFICE 0161 907 5555

[WWW.RNCM.AC.UK](http://WWW.RNCM.AC.UK)





# FRENCH CONNECTIONS

SPRING 2018

CELEBRATING THE MUSIC OF FRANCE AND ITS IMPACT ACROSS THE WORLD

#FRENCHCONNECTIONS

[RNCM.AC.UK/FRENCHCONNECTIONS](http://RNCM.AC.UK/FRENCHCONNECTIONS)

FRENCH CONNECTIONS