Summary of the Virtual Electron Microscopy Facility Meeting to establish safe working practices in the COVID-19 era

***Organisers:***

***Rik Brydson – University of Leeds, Clare Steele-King – University of York, Paul Verkade – University of Bristol***

This virtual meeting, conducted over Zoom, was one of a series of three RMS discussions to address the challenges faced by core facility staff in re-opening a microscopy unit in the current COVID-19 era. The meeting provided a unique opportunity for over 300 registrants from the EM community to share their experiences and ideas, and was truly international with participants from Europe, North America, Singapore, Australia, New Zealand, China and South Africa.

The meeting was divided into sections to provide a framework for discussion, with the opportunity for attendees to make verbal contributions, as well as contributing via an online chat that ran concurrently throughout the meeting. Poll questions after each discussion section proved invaluable in gauging the current views of the EM facility community, some of whom had already reopened their facility, but the majority of whom had not.

Probably foremost in everyone’s minds was how they were going to disinfect their facility, so this seemed a sensible place to start. There was much discussion of the best products to use, and while 70% Ethanol or isopropanol might be the most popular, there was understandable concern about the long-term effects of their use on some microscope components and control panels. Liquid on a cloth was thought to be safer than a spray, but ultimately it is the responsibility of each facility to check their cleaning plans with the manufacturers! Keyboards are less expensive to replace than microscope control panels, but easier to wrap in cling film or Saran wrap. The majority of voters felt that the responsibility for disinfecting microscopes between users should be shared, but opinions were influenced by the time required, the number of microscopes in a facility, the number of people going in and out of a microscope room, and whether you trust your user to do it carefully and thoroughly!

The use of PPE in the facility, particularly gloves, brought a whole range of opinions with varying but equally valid justifications, and while almost half of those who voted plan to make the wearing of gloves compulsory in their facility, there was also recognition that regular handwashing is one of our biggest weapons in the fight against the spread of COVID-19, and that PPE availability may well be limited or more urgently needed elsewhere.

Reducing the interaction with facility users is an essential element of running a core facility in the current COVID-19 era, and there was much discussion of the many ways this could be achieved. The majority of voters felt that the time buffer between microscope bookings should be at least 30 minutes, and it was acknowledged in the discussion that air conditioning parameters, such as the rate of air exchange and how effectively the circulating air is cleaned or filtered in a microscope room, may be pertinent to a participant’s response whilst not being within their control.

When considering reducing occupancy in the facility, the idea of a “drop-off point” to leave samples to be processed without the need for staff interaction was popular in discussion, as was the idea of allowing only experienced users to process their samples themselves, and restricting access to the facility to nominated “super-users” only. Over 75% who voted said they would limit access to some or all imaging techniques to full service only, which begs the question of who is going to pay the extra costs? The most popular response amongst voters (45%) was that these should be shared between facility and user, but whilst the remaining 55% of votes were fairly evenly split between the extra costs being borne entirely by the facility or by the user, the discussion revealed that, for some at least, the charging process is fixed by their institution and cannot be changed by facility staff. It seems the EM community are a very fair lot!

There was much discussion of the various methods for remote working, either to enable facility staff to be physically separated from users whilst working concurrently in the facility, or to enable staff to run facility services remotely from their home. Almost two-thirds who voted planned to investigate the use of phone apps/webcams/screen-sharing software etc for these purposes, and an additional 24% already have these tools in place, which contributed to a very useful discussion of where the difficulties lie. Two such challenges faced by many are the requirement for multiple screens/systems for the operation of one microscope and the fact that the software for many EMs runs on older computer operating systems that are no longer supported and that institutions are therefore reluctant to network (for understandable reasons). The level of support offered by an institution’s own IT service was also a major factor and was gratefully acknowledged by some!

A discussion of how to tackle training in the COVID-19 era brought out a true sense of EM community effort amongst the participants and there was acknowledgement of some very useful online videos and courses, but also a strong consensus that whilst these tools may be invaluable for new (and not so new) users alike, they are no substitute for hands-on training, particularly when considering aspects such as loading the specimen rod in an EM, so it was perhaps not surprising that 80% of participants who voted said they would not be training new users in the immediate term, with a further 18% offering limited training.

So how can we add benefit to the research of our users while they have limited or no access to the facility? One such idea is “Virtual User Group meetings”, which provide an opportunity for facility staff to share ideas, update users on the facilities available (albeit in more normal times!) and give users the opportunity to present their research – and perhaps their first webinar! Whilst a third of those who voted are already running such meetings, a further 49% thought it was a good idea, so we hope this is the start of something lovely! There were other ideas too, especially with consideration for the wellbeing of core facility staff while we are all apart from each other. Online coffee meets, lovingly expressed as a “morning huddle” by one, pub quizzes (all about the booze, apparently) was another, and there was even mention of Fancy Dress Fridays! And, as one participant pointed out, the EMs are feeling lonely too, so do spare a thought for them.

Thoughts of the EMs and other equipment were considered when discussion turned to the practical considerations of reopening a facility. Whilst providing a safe physical environment in the current conditions is seen as the biggest challenge for most users, considerations of financial viability and the availability of staff, as well as the supply of consumables (many have given away their PPE in recent weeks, for example), were also acknowledged. There was much discussion of the current status of facility microscopes after an extended period of inactivity, and we are grateful that many vendors and engineers joined our discussion; their input here was invaluable. There are challenges of course, such as getting an engineer to site in the current restricted climate, as well as a desire for hardware bolt-ons to be able to run microscopes remotely, but the overwhelming consensus from both vendors and facility staff is that we must keep each other fully informed. In that spirit, we will be able to tackle many of the challenges that arise.

The organisers would like to acknowledge the support of the RMS, particularly Victoria Masters and Adam Clay, who worked so hard to bring this meeting to fruition, and also Alison North and Peter O’Toole who had the initial idea to run such a discussion for LM and Flow facilities. We are also grateful to all who joined us to share their ideas and experiences, thereby enabling a constructive and informative discussion.

Finally, our most definitive poll result of the discussion was that a whopping 98% of participants who voted would like a follow-up EM meeting for further discussion of operating in a COVID-19 era. We are delighted that the meeting proved to be valuable to so many and we are now busy making plans for a follow up discussion on 11th June. Please put this date in your diaries- more information will be available on the RMS website very soon!