

## Viral Genomics and Bioinformatics (Asia), 22-26 August 2022 (Virtual)

### COURSE TIMETABLE

Introduction zoom link: <https://sanger.zoom.us/j/94409718818?pwd=Uy84TE1ueGxpTnpCRExmTGMyQWR4UT09>

| Thursday 18 <sup>th</sup> August 2022 |         |                                                                                                                                                               |               |                    |
|---------------------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------|
| Time                                  | Session | Content                                                                                                                                                       | Training team | WCS Staff          |
| 15:00-18:00 ICT<br>09:00-12:00 BST    | Intro   | Wellcome Connecting Science Welcome and Intro.<br>Training team introductions<br>Participant introductions<br>Advanced Learning and Training (TtT) - Workshop | All           | Zoom group session |

#### Training team

|                            |                    |
|----------------------------|--------------------|
| Srikeerthana Kuchi         | Kwanrutai Mairiang |
| David Studholme            | October Sessions   |
| Sreenu Vattipally          | Dhiraj Dhotre      |
| Urmila Kulkarni Kale       | Richard Orton      |
| Tan Le Van                 | To Nguyen          |
| Sunitha Manjari Kasibhatia | Yao-Tsun Li        |

#### Wellcome Connecting Science and COG-Train Staff

|                |                        |
|----------------|------------------------|
| Martin Aslett  | Leigh Jackson          |
| Mark Sheppard  | Peter Thomas-McEwen    |
| Alice Matimba  | Melanie Sharpe         |
| Rachel Berkson | Jorge Batista da Rocha |
| Karon Chappell | Laia Callico Delgado   |
| Treasa Creavin | Kim Smith              |

#### Course observers

|               |          |
|---------------|----------|
| Kate Edington | Sam Sims |
|---------------|----------|

**Course zoom link:** <https://sanger.zoom.us/j/97468582361?pwd=Y0Nyam9EcE4vazZVZ1Nta0h1ZGdWdz09>

**Github pages link:** <https://wcscourses.github.io/ViralBioinfAsia2022/>

**Github repository link:** <https://github.com/WCSCourses/ViralBioinfAsia2022>

**Slack:** ask Jorge at [jorge.batista-da-rocha@wellcomeconnectingscience.org](mailto:jorge.batista-da-rocha@wellcomeconnectingscience.org)

**Course Intro and Biographies:** [Course Introduction and Biographies](#)

| <b>Monday 22<sup>nd</sup> August 2022</b> |                   |                                             |                                                  |                                                                       |                      |
|-------------------------------------------|-------------------|---------------------------------------------|--------------------------------------------------|-----------------------------------------------------------------------|----------------------|
| <b>Time</b>                               | <b>Module</b>     | <b>Content/Title</b>                        | <b>Session structure</b>                         | <b>Training team</b>                                                  | <b>WCS Staff</b>     |
| <b>12:00-13.30 ICT</b><br>06:00-07.30 BST | 1                 | Introduction to Linux                       | Lecture + Practical                              | <b>Keerthana Kuchi</b><br>Jorge BDR<br>Koi (AW), Richard,<br>Yao-Tsun | KC<br>MA<br>MS<br>AM |
| <b>13:30-14:00 ICT</b><br>07:30-08.00 BST | <b>BREAK</b>      |                                             |                                                  |                                                                       |                      |
| <b>14:00-15.30 ICT</b><br>08:00-09:30 BST | 2                 | Linux text processing                       | Lecture + Practical<br>- if time - breakout room | <b>Keerthana Kuchi</b><br>Jorge BDR; Koi (AW),<br>Richard, Yao-Tsun   | KC<br>MA<br>MS       |
| <b>15:30-15:45 ICT</b><br>09:30-09.45 BST | <b>BREAK</b>      |                                             |                                                  |                                                                       |                      |
| <b>15:45-16:30 ICT</b><br>09:45-10:30 BST | S1                | COVID in Vietnam                            | <b>Seminar</b>                                   | <b>Tan Le Van</b>                                                     | AM                   |
| <b>16:30-17:30 ICT</b><br>10:30-11:30 BST | 3                 | Introduction to NGS sequencing              | Pre-recorded lecture<br>Live Q&A                 | <b>David Studholme</b><br>Jorge BDR                                   | MA<br>MS             |
| <b>17:30-18:30 ICT</b><br>11:30-12:30 BST | <b>MEAL BREAK</b> |                                             |                                                  |                                                                       |                      |
| <b>18:30-19:45 ICT</b><br>12:30-13:45 BST | 4                 | NGS file formats and data & QC              | Practical<br><i>Breakout rooms</i>               | <b>David Studholme</b><br>Jorge BDR, Koi (AW),<br>Hong, Richard       | KC<br>MA<br>MS       |
| <b>19:45-20:00 ICT</b><br>13:45-14:00 BST |                   | <i>Day wrap-up - <a href="#">survey</a></i> |                                                  |                                                                       |                      |

| Tuesday 23rd August 2022                  |                   |                                                                               |                                                      |                                                                           |                |
|-------------------------------------------|-------------------|-------------------------------------------------------------------------------|------------------------------------------------------|---------------------------------------------------------------------------|----------------|
| Time                                      | Module            | Content/Title                                                                 | Session structure                                    | Training team                                                             | WCS Staff      |
| <b>12:00-13.30 ICT</b><br>06:00-07.30 BST | 5                 | Introduction to BASH scripting                                                | Lecture + Practical<br><i>Breakout rooms if time</i> | <b>Kwanrutai Mairiang</b><br>David S, Keerthana,<br>Yao-Tsun, To, Koi     | KC<br>MA,JDBR  |
| <b>13:30-14:00 ICT</b><br>07:30-08.00 BST | <b>BREAK</b>      |                                                                               |                                                      |                                                                           |                |
| <b>14:00-15.30 ICT</b><br>08:00-09:30 BST | 5                 | Bash scripting (Cont...)<br>(answers at 15h10)                                | Practical<br><i>Breakout rooms</i>                   | <b>Kwanrutai Mairiang</b><br>Sreenu, To, Keerthana, Koi<br>(AW), Yao-Tsun | KC<br>MA, JDBR |
| <b>15:30-15:45 ICT</b><br>09:30-09.45 BST | <b>BREAK</b>      |                                                                               |                                                      |                                                                           |                |
| <b>15:45-16:30 ICT</b><br>09:45-10:30 BST | S2                | Sequencing to identify pathogens<br>associated with brain infections in India | Seminar                                              | <b>Dr.Chitra Pattabiraman</b>                                             | AM             |
| <b>16:30-17:30 ICT</b><br>10:30-11:30 BST | 6                 | Reference alignment                                                           | Practical intro<br><i>Breakout rooms</i>             | <b>October Sessions</b><br>David S, Datta, Sreenu, To,<br>Hong, Richard   | KC<br>MA,JDBR  |
| <b>17:30-18:30 ICT</b><br>11:30-12:30 BST | <b>MEAL BREAK</b> |                                                                               |                                                      |                                                                           |                |
| <b>18:30-19:45 ICT</b><br>12:30-13:45 BST | 7                 | Coverage plots & stats                                                        | Practical intro<br><i>Breakout rooms</i>             | <b>David Studholme</b><br>To, Hong, Sreenu, Richard                       | KC<br>MA,JDBR  |
| <b>19:45-20:00 ICT</b><br>13:45-14:00 BST |                   | <i>Day wrap-up - <a href="#">survey</a></i>                                   |                                                      |                                                                           |                |

**Wednesday 24<sup>th</sup> August 2022**

| Time                                      | Module            | Content/Title                               | Session structure                            | Training team                                                | WCS Staff     |
|-------------------------------------------|-------------------|---------------------------------------------|----------------------------------------------|--------------------------------------------------------------|---------------|
| <b>12:00-13:30 ICT</b><br>06:00-07.30 BST | 8                 | Consensus & variant calling                 | Lecture + Practical<br><i>Breakout rooms</i> | <b>October Sessions</b><br>David S,<br>Datta,Richard,Sreenu, | KC<br>MA,JDBR |
| <b>13:30-14:00 ICT</b><br>07:30-08.00 BST | <b>BREAK</b>      |                                             |                                              |                                                              |               |
| <b>14:00-15:30 ICT</b><br>08:00-09:30 BST | 9                 | De Novo assembly                            | Lecture + Practical<br><i>Breakout rooms</i> | <b>Sreenu Vattipally</b><br>To, Datta, David S, Richard      | KC<br>MA,JDBR |
| <b>15:30-15:45 ICT</b><br>09:30-09.45 BST | <b>BREAK</b>      |                                             |                                              |                                                              |               |
| <b>15:45-16:30 ICT</b><br>09:45-10:30 BST | S3                | Metagenomics (pathogen discovery +)         | <b>Seminar</b>                               | <b>Nguyen To Anh</b>                                         | AM            |
| <b>16:30-17:30 ICT</b><br>10:30-11:30 BST | 10                | Metagenomics                                | Practical<br><i>Breakout rooms</i>           | <b>Dhiraj Dhotre,</b><br>Datta, Sanket, Sreenu,<br>David     | KC<br>MA,JDBR |
| <b>17:30-18:30 ICT</b><br>11:30-12:30 BST | <b>MEAL BREAK</b> |                                             |                                              |                                                              |               |
| <b>18:30-19:45 ICT</b><br>12:30-13:45 BST | 10                | Metagenomics                                | Practical<br><i>Breakout rooms</i>           | <b>Dhiraj Dhotre</b><br>Sreenu, Datta, David,                | KC<br>MA,JDBR |
| <b>19:45-20:00 ICT</b><br>13:45-14:00 BST |                   | <i>Day wrap-up - <a href="#">survey</a></i> |                                              |                                                              |               |

| Thursday 25 <sup>th</sup> August 2022     |                   |                                             |                                              |                                                                         |                |
|-------------------------------------------|-------------------|---------------------------------------------|----------------------------------------------|-------------------------------------------------------------------------|----------------|
| Time                                      | Module            | Content/Title                               | Session structure                            | Training team                                                           | WCS Staff      |
| <b>12:00-13.30 ICT</b><br>06:00-07.30 BST | 11                | Introduction to MSA                         | Lecture + Practical<br><i>Breakout rooms</i> | <b>Urmila Kulkarni Kale</b> , Datta,<br>Sunitha, Sanket, Yao-Tsun       | KC<br>MA,JDBR, |
| <b>13:30-14:00 ICT</b><br>07:30-08.00 BST | <b>BREAK</b>      |                                             |                                              |                                                                         |                |
| <b>14:00-15.30 ICT</b><br>08:00-09:30 BST | 11                | Introduction to phylogenetic methods        | Lecture + Practical<br><i>Breakout rooms</i> | <b>Urmila Kulkarni Kale</b><br>Datta, Sunitha, Sanket, Yao-Tsun         | KC<br>MA,JDBR  |
| <b>15:30-15:45 ICT</b><br>09:30-09.45 BST | <b>BREAK</b>      |                                             |                                              |                                                                         |                |
| <b>15:45-16:30 ICT</b><br>09:45-10:30 BST | 11                | Typing of the viruses                       | Lecture + Practical<br><i>Breakout rooms</i> | <b>Urmila Kulkarni Kale</b><br>David S, Datta, Sunitha,<br>Hong,Sanket  | KC,JDBR<br>MA  |
| <b>16:30-17:30 ICT</b><br>10:30-11:30 BST | 11                | Tree building                               | Lecture + Practical<br><i>Breakout rooms</i> | <b>Urmila Kulkarni Kale</b><br>David S, Datta, Sunitha,<br>Hong, Sanket | KC<br>MA,JDBR  |
| <b>17:30-18:30 ICT</b><br>11:30-12:30 BST | <b>MEAL BREAK</b> |                                             |                                              |                                                                         |                |
| <b>18:30-19:45 ICT</b><br>12:30-13:45 BST | ALT               | Advanced Learning and Training (TtT)        | Workshop<br><i>Breakout rooms</i>            | <b>Alice Matimba</b><br>Jorge, Lia                                      | KC             |
| <b>19:45-20:00 ICT</b><br>13:45-14:00 BST |                   | <i>Day wrap-up - <a href="#">survey</a></i> |                                              |                                                                         |                |

| Friday 26 <sup>th</sup> August 2022       |                   |                                                                                                  |                                              |                                                           |                   |
|-------------------------------------------|-------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------------------|-------------------|
| Time                                      | Module            | Content/Title                                                                                    | Session structure                            | Training team                                             | WCS Staff         |
| <b>12:00-13:30 ICT</b><br>06:00-07.30 BST | 12                | SARS-CoV-2-Ref Assembly<br>Amplicons, MinION/Illumina ARTIC<br>Conda env (minion) and (Illumina) | Lecture + Practical<br><i>Breakout rooms</i> | <b>Richard Orton</b><br>Sreenu, Keerthana,<br>Yao-Tsun    | KC<br>MA,JDBR, AM |
| <b>13:30-14:00 ICT</b><br>07:30-08.00 BST | <b>BREAK</b>      |                                                                                                  |                                              |                                                           |                   |
| <b>14:00-15:30 ICT</b><br>08:00-09:30 BST | 12                | SARS-CoV-2-Mutations<br>Lineages, Pangolin Consensus<br>Mutations, Spear                         | Practical<br><i>Breakout rooms</i>           | <b>Richard Orton</b><br>Sreenu, Hong,<br>Urmila, Yao-Tsun | KC<br>MA,JDBR     |
| <b>15:30-15:45 ICT</b><br>09:30-09.45 BST | <b>BREAK</b>      |                                                                                                  |                                              |                                                           |                   |
| <b>15:45-16:30 ICT</b><br>09:45-10:30 BST | S5                | ARCTIC Protocol<br>(moved to 16h00 ICT)                                                          | <b>Seminar</b>                               | <b>Josh Quick</b>                                         | MA,JDBR, AM       |
| <b>16:30-17:30 ICT</b><br>10:30-11:30 BST | 12                | SARS-CoV-2 Phylo Civet/Usher                                                                     | Practical<br><i>Breakout rooms</i>           | <b>Richard Orton</b><br>David S, Sreenu, Urmila,<br>Kate  | MA,JDBR, AM       |
| <b>17:30-18:30 ICT</b><br>11:30-12:30 BST | <b>MEAL BREAK</b> |                                                                                                  |                                              |                                                           |                   |
| <b>18:30-19:15 ICT</b><br>12:30-13:15 BST | 12                | Group – SARS-CoV2 Practical                                                                      | Practical<br><i>Breakout rooms</i>           | <b>Richard Orton</b><br>David S, Sreenu, Hong             | MA,JDBR, AM       |
| <b>19:15-19:45 ICT</b><br>13:15-13:45 BST | QA                | Course Questions and Answers<br>(Photo, Post Course Survey)                                      |                                              | <b>All</b>                                                | MA,JDBR, AM       |
| <b>19:45-20:00 ICT</b><br>13:45-14:00 BST |                   | <b>Course wrap-up</b> - <a href="#">survey</a>                                                   |                                              | All                                                       |                   |

