



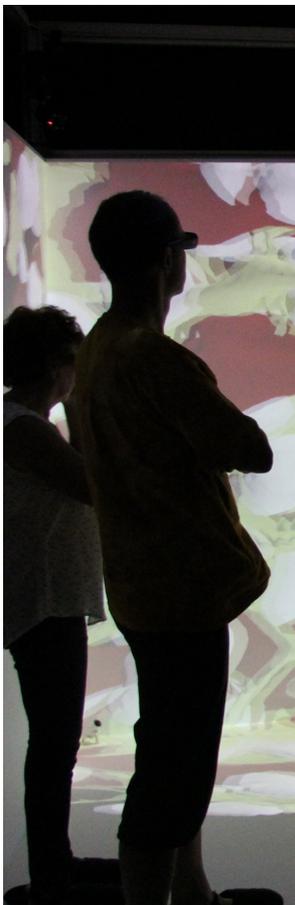
DRESDEN **SUMMER SCHOOL** IN SYSTEMS BIOLOGY

We look forward to welcoming you to Dresden for our Summer School in Systems Biology this August. In the following pages, we would like to provide some basic information to help you prepare for the Summer School and your time in Dresden.

Information Booklet

What to Expect. Where to Go. How to Prepare.

The Dresden Summer School in Systems Biology is hosted by the International Max Planck Research School for Cell, Developmental and Systems Biology (IMPRS-CellDevoSys) at the new Center for Systems Biology Dresden (CSBD). Participants with computational or quantitative backgrounds from all over the world will come to Dresden to benefit from this intense and encouraging learning environment. This school provides project-based research experience across scientific fields at the intersection of biology and computer science. Jargon is avoided to the extent possible; emphasis is rather placed on concepts explained intuitively through practical applications and hands-on experience.



Educational outcomes

The focus on biological systems is intended to allow participants to:

- Transfer computational and theoretical knowledge to the life sciences
- Identify & tackle challenges from big data to prediction in complex, multi-scale systems
- Further develop their trans-disciplinary communication and learning skills
- Formulate clear projects and design data- and model-based approaches to them.
- Get hands-on insight to emerging techniques from machine learning, artificial intelligence, visual computing, and scientific computing in the life sciences

Methods

In small interdisciplinary groups, you will carry out a research project throughout the whole week, under the supervision of our faculty and tutors who assist with data, advice, & practical know-how. Subjects include the latest and greatest developments in:

- augmented reality and virtual reality • machine learning • numerical simulation
- data-driven modeling / data science • image processing and computer vision
- parallel high-performance computing • graph and network science

You will see where technologies meet biological and medical applications, including:

- how embryos develop • how fertilized egg cells decide the head-tail axis
- how the genome “boots up” • how transport networks in cells organize
- how molecules and proteins behave mechanically • how material properties govern life

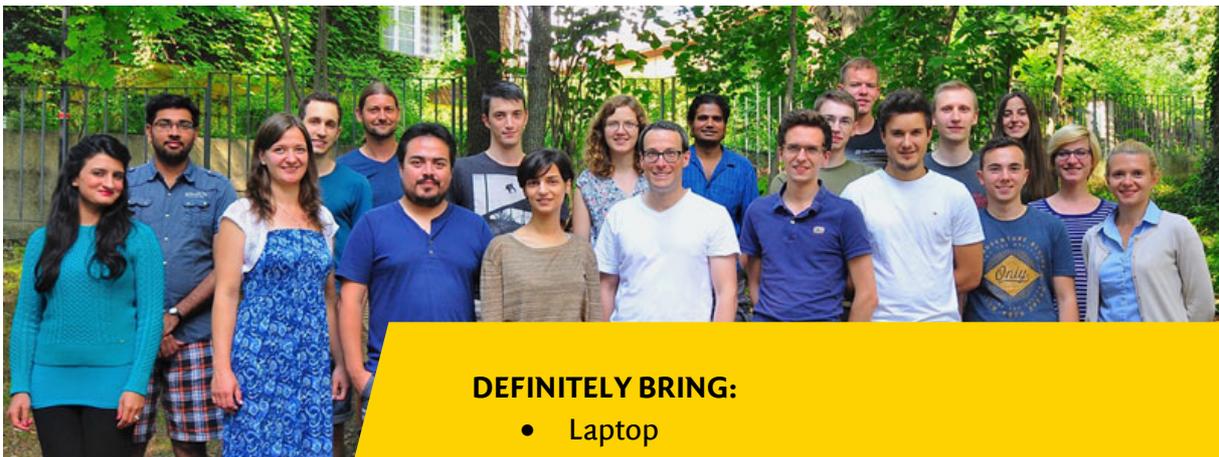
Format & Atmosphere

The kick-off event of the school is a poster session that allows the participants and organizers to get to know each other. This is always fascinating, as each participant has a different educational and research background.

Talks and colloquia will address the topics in systems biology, modelling and simulation, randomness, and machine learning. These broad fields are made relevant in practice, as each group works together on a research project throughout the whole week. The project is proposed by the school teachers and supervised by tutors from different disciplines, who help the groups and guide them with data. Regular progress presentations in the evenings allow participants to build their presentation skills while encouraging interaction in an interdisciplinary scientific environment.

In addition to the talks, colloquia, and project work, we host a series of evening talks by distinguished scientists from various fields related to systems biology. After a one-hour talk, the speaker stays with the participants for dinner and is available for lively follow-up discussions. These talks are intended to provide an overview of the breadth of scientific questions in systems biology. Throughout, there are ample opportunities to network with other participants and presenters, whether connecting with colleagues over coffee between morning lectures, or exchanging ideas in the evening with a cold drink in hand.

In summary, our Summer School offers you expert training in a variety of methods: engaging explanations of complex concepts, tutored practical projects, and lots of fun beyond scientific discussion in the beautiful setting of Dresden.



DEFINITELY BRING:

- Laptop
- Passport
- Your Poster (maximum size A0)
- Curiosity

POSSIBLY BRING:

- Cash for snacks & beverages
- Good walking shoes

The Institutes

Center for Systems Biology Dresden



The Center for Systems Biology Dresden (CSBD) is an initiative of the Max-Planck Society in collaboration with the Technische Universität Dresden (TUD), one of the eleven German Excellence Universities. The building, located near the MPI-CBG and TUD biomedical research campus, features optics suites for custom microscopy, server rooms for a state-of-the-art compute cluster, an immersive visualization cave, and 10G cabling

throughout. The center is further being connected to the Center for Information Services and High Performance Computing of TUD through a 10x10G redundant link to provide fast access to their high-performance compute clusters with tens of thousands of cores.

Lectures and formal presentations will take place in the Top Floor Seminar Room, which opens onto the rooftop terrace, convenient for taking in some nature and fresh air during breaks. Each team will have an assigned workroom with white boards on the top floor as well. You will have high-speed wireless internet access anywhere in the building.



Max Planck Institute of Molecular Cell Biology and Genetics



The research performed at the neighboring Max Planck Institute of Molecular Cell Biology and Genetics encompasses many topics from molecular, cellular, and developmental biology as well as from biophysics and biochemistry. 500 curiosity-driven scientists from over 50 countries ask: How do cells form tissues? Programs span

multiple scales of magnitude, from molecular assemblies to organelles, cells, tissues, organs, and organisms. A creative and pioneering flat organizational structure allows for cutting-edge shared services & facilities. Moreover, the absence of departmental divisions fosters direct communication and a slim administration.

Dresden

Dresden is considered to be one of the most beautiful towns in Germany. Located in southeast Germany in the valley of the river Elbe, Dresden is about 2 hours away from both Berlin and Prague. Being the capital of Saxony, it has been a center of political and cultural life for centuries. The city skyline features many beautiful buildings, including the world-famous Zwinger, the Semperoper, the Castle, the Court Chapel, and the recently rebuilt Frauenkirche. Whether you enjoy discovering exciting exhibitions, appreciate the entertainment of a new play, or rejoice in strolling through nature – with more than 100 museums, galleries, theatres, gardens and parks, Dresden will rise up to the tastes and preferences of everyone.

But the city is not only famous for its baroque architecture and its beautiful surrounding landscape. Dresden has evolved into a vivid international center for science and industry. It has become one of the most outstanding locations for research and science in Germany, with particular emphasis on biotechnology, nano- and microelectronics. In appreciation of this dynamic development, Dresden earned the nicknames “City of Science” and “Biopolis Dresden.”

Social Event

Castle visit, boat ride, city tour & dinner on the town!

As a special treat, to get to experience some of the many beautiful treasures of the local landscape, we have arranged a social event during the Summer School week. On Tuesday, 13 August, we will first take the bus to Pillnitz to visit the castle and gardens. Afterward, we will head back to the City Center by steamship. Once we arrive in the heart of the Old Town in Dresden, we will enjoy a guided city tour and have dinner together in town. Let's hope for great weather!



Explore Pillnitz
with a free
AudioGuide App!

<https://bit.ly/2X2>

DOXD

The Hotel

Guesthouse Mezcalero

Königsbrücker Str. 64

1 Hinterhaus

01099 Dresden

+49 0351.810.770

<https://www.mezcalero.de>

As a participant of our Summer School, room and board will be provided for you at Guesthouse Mezcalero, a colorful bed & breakfast in the center of Dresden Neustadt, the city's night-life hotspot.



The close proximity to public transit ensures quick access to the CSBD, as well as Neustadt's many restaurants, bars, and cafes. Please review options on the following pages to learn about transportation options between the hotel and the institute each day.

Wireless internet runs throughout the house, and breakfast is provided on site each morning (starting at 7:00am).

Please note that you will share a room with 1-2 other participants. Any personal expenses, for example additional drinks, are at your own cost and have to be paid upon departure.

Checking-In & Luggage

Check-in is possible starting at 3:00pm. Check-out time is by 12:00 noon. The reception is available for you 24/7. If necessary, it is possible to drop off luggage prior to official check-in, or store your luggage after check-out.

Nearby Supermarkets

There are several grocery stores, restaurants, and other shops close to Guesthouse Mezcalero. There is also a large post office nearby. Be aware that shops are generally closed on Sundays, but the Lidl in the nearby Bahnhof Neustadt is open.

- | | | |
|---------------|-------------------------|--------------------------|
| • Rewe City | Königsbrücker Straße 62 | (Mon-Sat 7:00am-10:00pm) |
| • Bio Company | Königsbrücker Straße 34 | (Mon-Sat 8:00am-9:00pm) |
| • Netto | Königsbrücker Straße 28 | (Mon-Sat 7:00am-10:00pm) |
| • Lidl | Schlesischer Platz 1 | (Mon-Sun 8:00am-9:00pm) |
| • Simmel | Antonstraße 2A | (Mon-Sat 8:00am-10:00pm) |

Directions & Transportation

Arriving in Dresden

You can use the public transport system in Dresden to reach Guesthouse Mezcalero or our Max Planck Institute from either the airport or the train station. You need to buy a “single trip” (“Einzelfahrt”) ticket for € 2.40.

Going to the Hotel

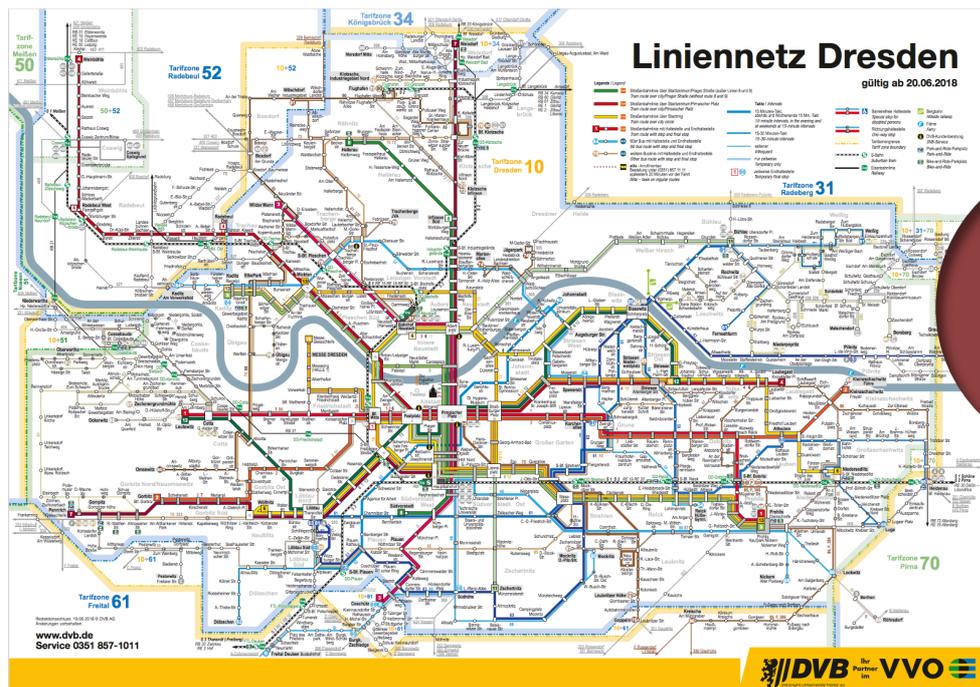
1. From the airport to the train station Dresden-Neustadt:
Please take the Airport City Liner (S-Bahn S2 direction “Pirna”, every 30 min.) from the airport to the train station “Bahnhof Dresden-Neustadt”.

2. From the train station Dresden-Neustadt to Guesthouse Mezcalero:
From “Bahnhof Dresden-Neustadt” either walk (5-7 minutes) or take the tram 3, 6, or 11 just one stop to Albertplatz. Here, between the two large fountains, board either the 7 (toward Weixdorf) or the 8 (toward Hellerau). Exit the tram at Bischofsweg, which is 2 stops after Albertplatz. You will see the Mezcalero sign from the street. The address is Königsbrücker Straße 64. The entrance to the guesthouse is through a courtyard.

Traveling directly to the Institute

3. From the Dresden-Neustadt or Dresden Main Train Station to the Max Planck Institute of Molecular Cell Biology and Genetics
Check <https://www.mpi-cbg.de/institute/how-to-get-here> for directions.

You can find general information about public transportation in Dresden at: www.dvb.de/en-gb/ There are also several apps to download which can help you get around.



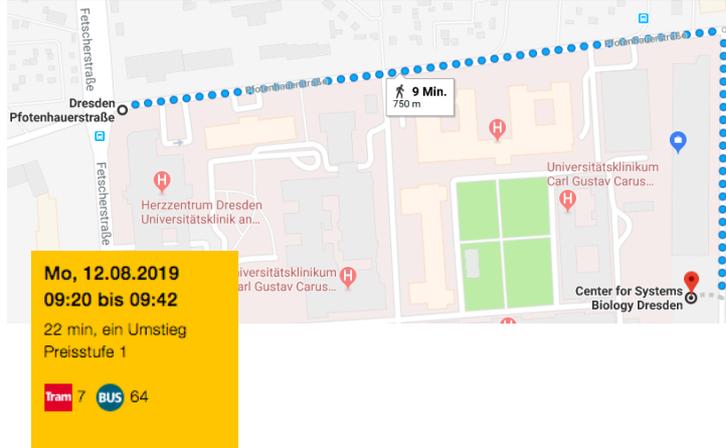
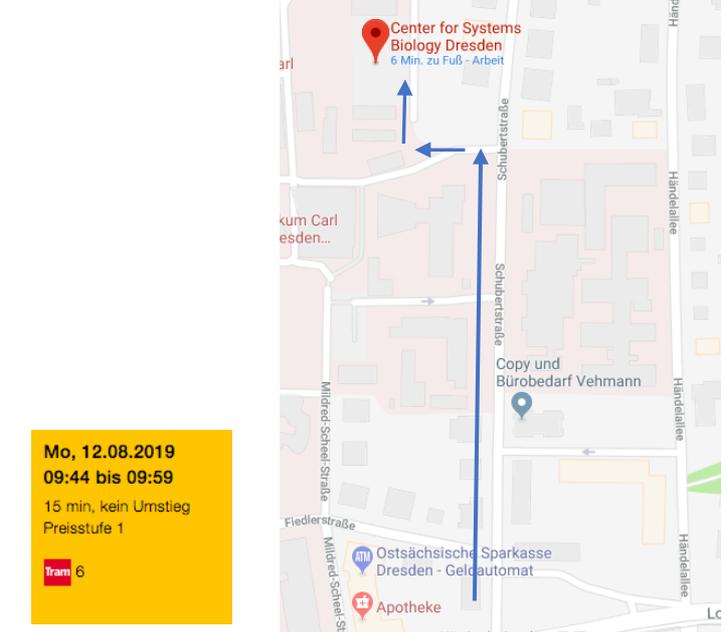
Useful Apps for Public Transit

- VVO Mobil
- DVB Mobil
- DVB Live

Getting from Mezcalero to CSBD

It is important to **arrive at the CSBD on time** for the morning lectures. This means leaving the hotel slightly before 9:30. In general there are busses and trains every 10 minutes, but the connections are not always reliable.

You will receive a **weekly ticket** for the public transit system at the Mezcalero reception desk when you check in! Note that **you must stamp your ticket once** to show the date of validity. Look for the orange boxes **when boarding the tram or bus for the first time**.

<p>GO NORTH + TAKE A BUS.</p> <ul style="list-style-type: none"> • Leave circa 9:20. • Take the 7 tram from Bischofsweg toward Hellerau. • Ride 2 stops to Stauffenbergallee. • Transfer to the 64 bus toward Striesen. • Exit the bus at Pfotenhauerstr. • Walk toward the MPI-CBG (blue-green building) • Turn and walk along the MPI-CBG driveway to the CSBD. 	<p>Connections every ~10 minutes, depart xx:x0, arrive xx:x2.</p> 
<p>GO SOUTH + TAKE THE TRAM.</p> <ul style="list-style-type: none"> • Leave circa 9:30. • Walk ~10 minutes (or take a 7 or 8 tram) south to Albertplatz. • From Albertplatz, take the 6 tram toward Niedersedlitz. • Ride 8 stops to Königsheimplatz. • Walk north along Schubertstr. to a gate for the University Clinic. • Turn left through the gate. • Follow the path to the bike stands & through the fence to the CSBD. 	<p>Connections every ~10 minutes, depart xx:x4, arrive xx:x9.</p> 



Rent a bike! It takes only 15 minutes to get to the institute by bike. Nearby “Roll On Dresden” offers [weekly bicycle rental](#) for 39 EUR (city bike) or 49 (trekking bike).

Meals

- **Breakfast** is provided each morning at Mezcalero. The buffet is available starting at 7:00am.
- **Coffee breaks** will include coffee, tea, water & juice, as well as fruit and light snacks.
- **Lunches** during the day will be served in the MPI-CBG canteen based on a voucher system. Vouchers will cover meal costs of up to 7 EUR, which is usually sufficient for a main course and desert. Water is freely available on the tables.
- **Dinners** will be in a relaxed atmosphere in the CSBD Atrium, where you can engage with the highlight speakers and other summer school participants. Water & juice will be available.
- If you wish to have **beer or wine with dinner** following the highlight talks, we will place an order for those interested. We would collect 5 EUR at registration to cover these costs. Please **indicate your preferences** here: <https://terminplaner4.dfn.de/no812HH23pmfxXAj>

We also have a few **special meals** planned. There will be a festive welcome dinner on Saturday 10.08.2019. The evening of Tuesday 13.08.2019 we have a reservation at El Español, a restaurant in the Neustadt serving Spanish atmosphere and Tapas. We will close the school the evening of 17.08.2019 with a barbecue in the courtyard of Mezcalero. Beef, chicken, and vegetarian options will be available.

Because the MPI-CBG Canteen is closed on the weekends, we will be ordering from a few local restaurants on these days. Please **choose your preferred meal** via the links **by 1 August**.

Sunday, 11.08.2019: Turkish Dürüm & Pide <https://terminplaner4.dfn.de/zr3yYFfDhVcGw5Cd>

Saturday, 17.08.2019: Thai Noodles & Curry <https://terminplaner4.dfn.de/MPssyewTyEkE2LuA>

Travel Reimbursement

If you received a travel stipend, please note the following information regarding your reimbursement. Your reimbursement method (cash/bank transfer) will correspond to the choice on your travel plan. **You will need to provide the following:**

- all **original** tickets/boarding passes
- documentation (invoice, receipt, e-ticket...) confirming the following information:
 - ✓ passenger name
 - ✓ purchase price
 - ✓ taxes
 - ✓ currency

POSTAL ADDRESS:

Brian von Rueden
PhD Program Office
Max Planck Institute of Molecular Cell
Biology and Genetics
Pfortenhauerstrasse 108
01307 Dresden
Germany

CASH REIMBURSEMENT	BANK TRANSFER
Please stop by the PhD office during the day Wednesday August 14 or Friday August 16 to drop off documents and receive your reimbursement. In case you still need your tickets for the return trip, please present copies of your tickets. When you return home, send any missing original documents (e.g. boarding pass of the return journey) using the postal address above.	Please hand in all above-mentioned documents to the PhD Office sometime during the week. In case you still need your tickets for the return trip, please present copies of your tickets. When you return home, send any missing original documents (e.g. boarding pass of the return journey) using the postal address above. Reimbursement can only be initiated upon receipt of all necessary documents.

Questions

Please **do not hesitate to contact us** if you have additional questions! **Have fun!**

SCHEDULE | 2019 DRESDEN SUMMER SCHOOL IN SYSTEMS BIOLOGY | as of 02.07.2019

SATURDAY, August 10, 2019			
08:00	14:00	Arrival & Baggage Drop	Reception (Mezcalero)
14:00	15:00	Registration	Atrium (CSBD)
15:00	16:00	Welcome & Introductory Remarks	Top Floor SR (CSBD)
16:00	17:00	Talk: What is Systems Biology	Top Floor SR (CSBD)
17:00	18:00	Guided Tour of MPI-CBG & CSBD	MPI-CBG & CSBD
18:00	20:00	Poster Session & Reception	Atrium (MPI-CBG)
20:00	21:00	Welcome Dinner	CSBD Atrium

SUNDAY, August 11, 2019			
09:00	10:00	Breakfast	Dining area (Mezcalero)
10:00	11:45	Intro to projects and group formation	Top Floor SR (CSBD)
11:45	12:00	Coffee break	Top Floor (CSBD)
12:00	13:00	Intro of group topics in the respective labs	Labs
13:00	14:00	Lunch	Atrium (CSBD)
14:00	16:45	Project work	Labs
16:45	17:00	Coffee break	Top Floor (CSBD)
17:00	19:00	Project work	Labs
19:15	20:00	Highlight Speaker: Anne Grapin-Botton	Top Floor SR (CSBD)
20:00	22:00	Dinner + Meet the Speaker	CSBD Atrium

MONDAY, August 12, 2019			
09:00	10:00	Breakfast	Dining area (Mezcalero)
10:00	11:00	Colloquium: Modeling and Simulation: why and what?	Top Floor SR (CSBD)
11:00	11:45	Project work	Labs
11:45	12:00	Coffee break	Top Floor (CSBD)
12:00	13:00	Project work	Labs
13:00	14:00	Lunch + Group photo	Canteen (MPI-CBG)
14:00	16:45	Project work	Labs
16:45	17:00	Coffee break	Top Floor (CSBD)
17:00	19:00	Group progress presentations	Top Floor SR (CSBD)
19:15	20:00	Highlight Speaker: Gaia Pigino	Top Floor SR (CSBD)
20:00	22:00	Dinner + Meet the Speaker	CSBD Atrium

TUESDAY, August 13, 2019			
09:00	10:00	Breakfast	Dining area (Mezcalero)
11:00	11:45	Project work	Labs
11:45	12:00	Coffee break	
12:00	13:00	Project work	Labs
13:00	14:00	'Brown-Bag' Lunch / Travel to Pillnitz	Canteen (MPI-CBG)
14:00	16:00	Social Activity: Visit Pillnitz Castle & Gardens	Königsheimplatz - Pillnitz
16:10	17:10	Social Activity: Steamship Cruise	Elbe River
17:20	19:20	Social Activity: Dresden City Tour	Meet at Schloßplatz
19:30	21:00	Dinner in Town	El Español

WEDNESDAY, August 14, 2019

09:00	10:00	Breakfast	Dining area (Mezcalero)
10:00	11:00	Colloquium: Randomness	Top Floor SR (CSBD)
11:00	11:45	Project work	Labs
11:45	12:00	Coffee break	
12:00	13:00	Project work	Labs
13:00	14:00	Lunch	Canteen (MPI-CBG)
14:00	16:45	Project work	Labs
16:45	17:00	Coffee break	
17:00	19:00	Group progress presentations	Top Floor SR (CSBD)
19:15	20:00	Highlight Speaker: Jacqueline Tabler	Top Floor SR (CSBD)
20:00	22:00	Dinner + Meet the Speaker	CSBD Atrium

THURSDAY, August 15, 2019

09:00	10:00	Breakfast	Dining area (Mezcalero)
10:00	11:45	Project work	Labs
11:45	12:00	Coffee break	
12:00	13:00	Project work	Labs
13:00	14:00	Lunch	Canteen (MPI-CBG)
14:00	16:45	Project work	Labs
16:45	17:00	Coffee break	
17:00	19:00	Group progress presentations	Top Floor SR (CSBD)
19:15	20:00	Highlight Speaker: Suzanne Eaton	Top Floor SR (CSBD)
20:00	21:00	Dinner + Meet the Speaker	CSBD Atrium

FRIDAY, August 16, 2019

09:00	10:00	Breakfast	Dining area (Mezcalero)
10:00	11:00	Colloquium: Ethics of Machine Learning	Top Floor SR (CSBD)
11:00	11:45	Project work	Labs
11:45	12:00	Coffee break	
12:00	13:00	Project work	Labs
13:00	14:00	Lunch	Canteen (MPI-CBG)
14:00	16:45	Project work	Labs
16:45	17:00	Coffee break	
17:00	19:00	Group progress presentations	Top Floor SR (CSBD)
19:15	20:00	Highlight Speaker: Christoph Weber	Top Floor SR (CSBD)
20:00	21:00	Dinner + Meet the Speaker	CSBD Atrium

SATURDAY, August 17, 2019

09:00	10:00	Breakfast	Dining area (Mezcalero)
10:00	11:45	Project work	Labs
11:45	12:00	Coffee break	
12:00	13:00	Project work	Labs
13:00	14:00	Lunch	Canteen (MPI-CBG)
14:00	16:45	Final Group Presentations I	Top Floor SR (CSBD)
16:45	17:00	Coffee break	
17:00	18:00	Final Group Presentations II	Top Floor SR (CSBD)
18:00	20:00	Movies, Awards & Wrap-Up	Top Floor SR (CSBD)
20:00		Farewell Dinner & Party	Courtyard (Mezcalero)