15/11/2021 MacaqueNet General Assembly Meeting Minutes

Meeting attended by members of the MacaqueNet consortium only.

Agenda:

- Update on two comparative macaque projects currently underway
- Update on database
- Discuss the idea of MacaqueNet & potential future directions
- Space for general questions/comments/suggestions for future directions
- Discussion can continue on Slack and email
- Minutes and recording of the meeting will be shared with all contributors

Project 1: Social diversity and social complexity (Julie Dubosc, Christof Neumann & Bernard Thierry)

- Species of macaques vary in their level of tolerance and level of social diversity and complexity
- Hypothesis - Less tolerant macaques express less social diversity in their social relationships and therefore less social complexity than more tolerant macaques
    - Some data to suggest this is the case but a broader perspective and more data is needed
- Fischer et al. 2017 has laid the groundwork for calculating diversity/differentiation of social relationships -> this might offer a window into social complexity
- Variation in different measures of sociality can give us a sense of the complexity of the social system
    - E.g. mean degree, strength, modularity, reciprocity
- Overarching goal: To test the relationship between social styles, social diversity and social complexity
    - Challenges: How do we get at social diversity, how do we measure this? How do we go from social diversity to social complexity? How do we think about what is complex and what is diverse?
    - This will have to be an open discussion and will likely lead to many more questions!

- Questions
    - Contributor asked what the overarching goal of the project is - to get a general picture of how diversity and complexity varies across the range of macaque species? What about accounting for other processes that might contribute to variation in number of partners, etc. ?
        - Julie answered that hope is to establish general patterns – ideally one number that tells us this is a complex society or a less complex society.

Would like to arrive at as general a rule as possible and see what the noise is around that rule.
        - But acknowledged this is very challenging and will have to take into account many factors affecting variation (e.g. within species variation, captive vs. wild, differences in group number). This variation might prevent us from arriving at a general rule.
    - Contributor asked about the enormous amount of intraspecies variation in the wild, are there opportunities to look at intraspecies variation, and the factors that drive this variation? Is it possible to re-visit definitions of social styles – are there alternative interpretations?
        - Julie answered that she is not as interested in investigating intraspecies variation but there is certainly space within the project to look at this. This could be another project entirely & would be very valuable to investigate.
        - Having these fixed definitions is maybe not useful and we need to think of this more as a continuum. We need to somehow incorporate the variation that exists around these different “social styles”.
    - Contributor commented that they agree that “social styles” are more of a continuum than a category. We also need to consider intraspecies variation and even variation between dyads when considering social styles - female-female relationships are different from male-male relationships, etc.
        - Julie agreed and said this is where we need to be careful. What is comparable? What can we and should we compare, directly?
    - Contributor commented that we need to keep in mind the idea of covariation – many of these social traits are not free to vary independently from one another. In this sense it may be necessary to keep some sense of “social style”. This is a problem we will have to think about how to tackle statistically.
    - Contributor commented that in order to get at intraspecies variation we need to consider what data we do/don’t have. Ideally we want people to submit all data, even the rare stuff. This might require another round of gathering data.
    - Contributor asked why we are assuming tolerance is associated with social complexity? What is the reasoning behind this? Why are we focussing specifically on tolerance? This is just one dimension of sociality.
        - Julie answered that the rationale for this is that more tolerant macaques have more ways of being aggressive/affiliative compared to less tolerant species who have more fixed ways. This should lead to more diverse/more complex social systems in more tolerant species.
        - There is also a historical basis to the use of tolerance- macaques have traditionally been classified as more/less tolerant. Social tolerance encompasses a lot of the characteristics of macaque social systems.
    - Contributor asked about measuring tolerance from the data we have, rather than taking tolerance for granted that certain species are more or less tolerant.
        - Julie answered that there are ways that we might assign tolerance scores to different groups (from some of Bernard Thierry’s work)- this might be a project that we could pursue as part of MacaqueNet.

- Contributor raised the issue of data-dredging when you have so much data to work worth and making sure analyses are securely grounded with a clear biological rationale. Not expecting an answer just raising this as an issue to think about as the project moves forward.
- Contributor raised the concern that age-related variation in social behaviour might be an enormous confound that we need to account for.
    - Julie answered that the current database has excluded juveniles but not older individuals.
    - Julie suggested that one way to account for this is to include individual characteristics (e.g. age) in the analyses.
    - Contributor suggested that confining the age range might also help?
    - Contributor commented that this maybe isn't such a big deal? First step is to analyze the social metric(s) of interest in the groups as they are and assume this is a reasonable representation of the species?
    - Contributor commented that we should worry about this alot as it could mean we are not talking about species differences, we are talking about age differences. If ages are reasonably balanced across groups then maybe OK. But need to consider things like the mean age of the group.
    - Contributor commented that this issue of age is also closely tied to confounds associated with wild vs. captive/provisioned populations (e.g. less variation in the wild).
    - Contributor commented that this is an interesting empirical question in and of itself - Does age composition affect social complexity?
    - We need to think about what data we actually have to answer this question or if we can get the data. But many people may not distinguish between adult and old in their data.
- Contributor commented that we need to keep a positive outlook – we have an enormous amount of data - we can answer some questions, this is a good starting point, we can then use this momentum to collect more data and answer further questions.
- Contributor commented that it is important to be thinking about these questions and concerns now because some analyses we are doing might need additional refinement to ensure we are not observing misleading patterns. For example- have we separated wild and provisioned groups, have we standardized how dominance hierarchies are calculated across datasets?
- Contributor commented that the dataset does include information on whether populations are wild/captive/free ranging so we can account for this in our analyses. This might account for a lot of the variation in the data that is otherwise unobservable (given the information that we have).
- Contributor reminded everyone that the database is only as good as the data we have – reminder to contributors that if you have other data that might be interesting/ important to please share it.
- Contributor commented that the best workflow might be for project lead to clearly lay out the proposed plan for data analysis and then ask for feedback. If there is

a plan in place with a hierarchy of importance it will be easier for collaborators to provide feedback.
    - Julie commented that for these first two projects there are clear ideas and hypotheses in place but the future of this collaboration is completely open to discussion and ideas from the group.
    - Contributor commented that they agree with the importance of establishing project leads and making the plan clear for all. Someone needs to make decisions to drive the projects forward. Future projects should stem from what we have discussed here. Building this database will hopefully allow for future collaborations.

Project 2: Social and ecological drivers of variation in dyadic social bonds (Delphine De Moor, Laurent Brent, Julia Ostner & Oliver Schülke)

- Macaque species have similar social organisation, a well-resolved phylogeny, but lots of variation in social and ecological features e.g. reproductive skew, within-group relatedness, female hierarchy steepness, predation risk & climate. There is also a lot of variation in social structure. In some species/groups individuals form relationships with all of their group members, while in other species relationships are more differentiated, and usually more structured by rank & kinship.
- We can now test, with this comparative dataset, whether some of the differences in social and ecological features predict the variation in social structure and social relationships we see across macaque species & groups.
- This is funded by a project called FriendOrigins (Lauren Brent's ERC grant: www.FriendOrigins.com).

- Questions
    - Contributor commented that we might need a common language so that we do not argue over definitions. For example, do we all agree on the definition of friendship, or of social complexity?
        - Delphine answered that these are important questions to ask, and should be discussed, but we also should not get bogged down in these details unless directly relevant to the question. The point of this project is to look at differences in affiliative social relationships across species but these relationships do not need to be defined as "friendships" therefore the definition of friendship does not necessarily need to be agreed upon by everybody for project #2. On the other hand, it may be important that everybody agrees on the definition of social complexity for project #1.
        - Lauren suggested that there are already some mainstream definitions of friendship e.g. a repeated affiliative interaction that is consistent and stable over time and differentiated from other social relationships in the group. But while this project might have implications for how we think about what friendship is, the main point of this project is not studying friendship per se.

    - Contributor asked whether this project is only looking at affiliative relationships, or at all relationships that together form the social structure of a group?
        - Delphine answered that her project is looking at all social relationships on all levels, not just strong social bonds'. The questions being asked are at the group level, but using dyadic relationship data.
    - Contributor commented that while it is interesting to talk about semantics it is not so important; we just need to be consistent in how we define the way we are looking at social relationships.
    - Contributor asked how social/ecological variables will be quantified. In particular, they asked how circularity will be avoided when asking how social factors influence social relationships.
        - Delphine answered that this is important to address and she is still thinking about it. It is important to note that species won't just have one datapoint per social/ecological factor. Each population will have its own associated ecological/social variables and species will be a predictor. There may be instances where we don't have data for a particular socio-ecological variable (e.g. predation rate) and may need to use proxies to measure these things.
    - Contributor asked if only wild data is being included
        - Delphine responded that while both wild and non-wild populations are included, she will ask analytically whether there are differences between these groups

Database and Analysis (presented by Christof Neumann)

- Data from 14 species from 60(ish) groups
- 200+ affiliative/aggression networks
- Data is still being added (still 10+ groups to come but no new species)
- Still standardizing and revising metadata (trying to deal with things like age)
- All of this data is cross sectional in nature. Going forward, it would be great to think about collecting and collating longitudinal data. This will involve careful thinking about how best to store and manage it.

Extra points to note

- Delphine will be in contact with all contributors shortly in order to ask whether all metadata for that contributor's data is correct. In addition, the list of contributors per dataset will need to be double checked. All individuals who contributed to the data will either be co-authors or, if they would rather not be for whatever reason, listed in the acknowledgements.

Future directions (presented by Delphine De Moor)

- Proposes MacaqueNet, where macaque researchers share data with one another and collaborate on comparative projects.
- Would like to hear all contributors' ideas for future directions for MacaqueNet. There is no specific lead for this project; it is envisaged as a group effort.
- A survey was done to understand contributors' current opinions on future directions of MacaqueNet.
    - Would it be useful to have all the social media currently used (email/slack/website) for MacaqueNet?
        - Most people would like a website, and this should be separate from the FriendOrigins website (where it is currently hosted)
        - Slack and email will also continue to be used
    - Is there interest in a github repository?
        - While there is not a lot of interest in a github repository, Delphine suggests that this is a very important future direction given that we want the science produced by MacaqueNet to be reproducible and transparent.
    - Is there interest in adding more projects to MacaqueNet (beyond the two already proposed)?
        - Most people see themselves proposing a new project using the database, which is great news.
    - Should the current database be published with a methods paper?
        - Most think yes but there are mixed opinions on whether the database should be publicly available. Note that nobody's data will be made publicly available without their explicit permission.
    - Should MacaqueNet become a long-term, curated database?
        - Most people would like to see this.
        - If we do have a curated database, it might be useful to have something on the website to show what data is available. People could filter for specific species or behaviours or sex, and could request this. There are mixed opinions on how this data should be accessible (freely, upon request etc), and this will be a topic of future discussion.
        - Also for future discussion is how people are alerted to a request for their data (e.g., over email?).
    - Would contributors like a clean and standardised version of the data to be sent to them?
        - Most contributors would like this.

Discussion on future directions (not recorded)

- Contributor commented that we need to ensure data is consistent, and discuss how to keep the data standardised.
    - Another contributor replied that perhaps we should align and standardise data collection, not just data input.
    - In response, a contributor said this was perhaps unrealistic. Statistically, it is also possible to deal with data that is collected using different methods.

- Another contributor responded that for a future project, it may be possible to request that all data pertinent to that project is collected in a particular, standardised way, but it is not really necessary or realistic that all data for every project would be. Indeed, for the two projects already described it is not needed.
- Another contributor added that in the grand scheme of things we still have grooming, proximity data, etc. so similar types of data to compare across species even if they are not all collected in the same way. Furthermore we already have a lot of experience dealing with differently collected data at the analysis stage, so this is not a big issue.

End of meeting.