1. How did the results compare to what you expected?

We expected that Yongey Mingyur Rinpoche's (YMR) brain aging would be slower compared to the control group, but we did not have an estimate on the actual magnitude of the difference (e.g. the eight years) and how it would manifest. It was interesting for us to find that the differences between Yongey Mingyur Rinpoche and the control group were global instead of local to specific regions that have been known to be affected in prior meditation research. This tells us that specific regional changes alone do not fully explain the brain aging process and one would need to take into account the changes that are happening throughout the brain simultaneously. This is why we used an AI based approach to find patterns that can't easily be detected with non-AI approaches or even an expert set of eyes.

2. Yongey Mingyur Rinpoche's brain scans came back as older than he was at 27. At 41, they came back as younger. Why do you think that is? What would you expect to happen as he got older?

The brain resemblance results can be explained by biological interpretations as well as bias in the sample spread. The apparent flip at 27 could explained by the following two reasons. First, the sample spread from people in the control group when YMR was 27 is quite different compared to when he was 41. There were more samples (234) in the control group who were older than YMR and fewer people (only 5) who were younger than him at that time, so there is a bias towards older samples when doing the brain resemblance search at 27. At the 41-year-old scan, on the other hand, the control samples were spread more evenly in the older (178) and younger (61) groups, which reduced the bias towards either younger or older samples, giving more weight to biological interpretation of slower brain aging. Second, the biological interpretation could be associated with how the brain matures. The findings raise the possibility that YMR's brain matures earlier but ages more slowly compared with the average brain.

Without additional data it is difficult to predict what would happen as YMR gets older. Based on other types of biological evidence, we believe it would continue to appear younger than his chronological age.

3. What do you hope to study next?

We hope to study brain images of more individuals with similar life experiences to that of YMR but differing in meditation practices. We also are examining structural changes in the brain longitudinally among individuals who are randomly assigned to training conditions in which they learn to meditate versus learn other life skills to determine more definitively the impact of meditation in producing the structural changes in the brain we observed here.

4. Do you think there is anything people can take away from this, particularly in times of high stress like we are going through at the moment with the coronavirus outbreak?

We know that practices like meditation can help with stress and emotional health, which could be useful to people during these turbulent times with the pandemic we're experiencing. We are being asked to practice "social distancing" but what we really need to do is to physically distance and socially connect. And, when we engage in physical distancing, it is an act of generosity toward others since we engage in this behavior to both protect ourselves and to protect others from the spread of the virus.