Riva Naumaan 79393203

Soseki Kashimori 85121903

May Eindra Tet Toe 17384280

Nucha Powanusorn 51000289

Paco Chan 82033788

GROUP 14

There is no definitive answer to when life begins. In fact, this has been a question of debate for the longest time, for both scientists and politicians. Some would argue that life begins even before fertilization - the gametes themselves are alive, while others view that life only begins once the egg is fertilized and the cell begins to replicate.

**Internal fertilization:**

Within our group, there were two dissenting opinions, mainly May and Riva’s perspective (*P1*) and Paco and Nucha’s (*P2)* perspective. *P1* argued that the definition of when life begins is when the heart of the organism begins beating. They argued that this is when we can see the cells be a part of a larger system, rather than being a lump of cells (blastocyst). *P2* however pointed out that if you chop off the head of someone, the cells of the head remain alive and conscious for a little while even if there is no heartbeat. Therefore *P2* suggested it should be the moment the cell begins to divide. Our group then decided to compromise, and agree that the complexities of life mean that there is no definitive way to determine when something starts becoming alive. For example, a bacterial cell may be alive, even if it is not dividing, or have a heartbeat. A human or animal, however, might have a different set of rules (e.g. heartbeat, ability to sustain itself, consciousness, etc.). We decided that the point at which life begins would vary throughout organisms, and that it would likely be a case by case assessment. A good start would be when the organism can survive on its own (physically, not economically / being taught how to hunt etc.)

**External fertilization:**

Similarly to internal fertilization, we found that the definition should not change regardless of whether it is internal or external, since it is merely a matter of location. However, we should consider that in many cases, the offspring in internal fertilization can be parasitic to the parent, and they are unable to survive independently. Organisms which undergo external fertilization are likely to be independent earlier, so in that case, there would be a difference.