Methods in Neurobiology - Module 7 Case Study
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Background:
The Dog Aging Project, which is directed Promislow and Kaeberlein from the University of Washington, aims to extend the lifespan of dogs by conducting a longitudinal study of aging in dogs and an intervention trial with rapamycin to prevent disease and keeping a dog healthy in its middle age. [1] They believe that extending the lifespans of dogs will overall increase human's quality of life. However, I'd like to look at how we may extend the life of cats, as some people may be more drawn to a cat rather than a dog. Jake Perry, a man from Austin, Texas broke the Guinness World Record *twice* for having the longest living cat. In 1998, his cat Grandpa Rexs Allen, who was part Sphynx part Devon Rex, lived to be 34 years old. Perry then beat his own world record again in 2005 with a tabby mix named Crème Puff; Crème Puff lived to be 38 years old. Perry, a cat man at heart, has always taken care of cats and claims that about one-third of his cats live to be about 30 years old, which is twice the life expectancy of an average cat. Perry states that the key to feline longevity lies in their diet, which consisted of dry commercial cat food topped with cooked eggs, turkey bacon, broccoli, and coffee with cream. Every other day, Perry would also give his cats an eye dropper full of red wine, which he suggested helped "circulate the arteries". [2] Dietary restrictions have already been observed to extend life expectancy, such as green tea extracts and curcumin for their anti-inflammatory properties. Dietary restrictions modulate sirtuins, IGF-1, and mTOR, which are believed to be linked to stress response reduction, improved mitochondrial biogenesis, improved cellular maintenance, and reduced inflammation. Red wine, on the other hand, contains a natural polyphenol known as RESV, which has been shown to extend the lifespan of *C. elegans.* [1]

Aim:
To determine whether similar dietary restrictions in felines increases their longevity, allowing them to live to be 30 years old or greater.

Plan:
- To determine if dietary restrictions do in fact allow cats to live longer, which in turn will increase the quality of life for humans who are particularly drawn to cats.
- The researcher, Vanessa Libera, has agreed to use her personal cats as part of this experimental plan. She has two cats, an elderly Siamese / Maine Coon mix, Tommy, who is 19 years old and Luna who is a 3-year-old Bombay. Tommy has been fed Purina dry cat food and Friskies wet food since he was a kitten. Luna is fed the Science Hills Diet dry cat food, and Wellness Selects wet cat food. Tommy's food is considered to be on the lower quality side for cat food, whereas Luna's food is considered a holistic diet that is more costly. Both cats are sterilized, and therefore cannot reproduce and neither have any pre-existing health conditions.
- Tommy will be considered the control cat, since he is already 19 years old and has already surpassed the average life expectancy for a feline with an average cat diet of dry and wet food. Luna will be the cat who will be placed on a new diet which follows Mr. Perry's suggestion of dry food topped with cooked eggs, turkey bacon, broccoli, and

coffee and cream. Luna will also receive and eye dropper full of wine on top of her meal, and if she refuses the wine, it will be replaced with an eye dropper full of green tea every two days. The coffee, cream, and wine amount will be kept to a minimum so that it does not have any toxic effects on Luna. Should any of the food have an adverse effect on Luna, the experiment will be ceased in order to make sure the cats are taken care of properly without harm.

- Tommy's feedings will be kept the same, with three regularly sized portions given in the morning, afternoon, and at night. Luna's feeding schedule will be similar, however, her morning meal will consist of Mr. Perry's recommended cat meal, followed by commercial cat food in the afternoon and night.
- Tommy, being an elderly cat, does not have much physical activity anymore, so he will be allowed to carry on about his day. Luna, being a much younger more energetic cat will still receive lots of play time to keep her active.
- Experiment will be conducted until cats naturally pass away, bearing any major health conditions that may arise unexpectedly. Time will tell how effective commercial cat food diets are versus Mr. Perry's miracle cat food meals.

Conclusion:
Since cats are natural omnivores, their nutrients are derived from animal products, as they are natural hunters in the wild. Their diet requires adequate amounts of protein, fat, and a small amount of carbohydrates.[3] I expect that Luna's dietary restriction will potentially protect her against obesity, cancer, neurodegeneration, and will keep her strong. Neither cat will experience malnutrition, which is also a requirement for the dietary restriction to increase life expectancy.[4] Though this experiment is not very technical, it may lead to conclusions that increase feline lifespans and increase quality of life for cat people, or will at least inspire other scientists to consider research plans to create ideal dietary restrictions for cats that will allow them to live longer than 15 years if the owner plans on having a pet for a very long time.

Sources:

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