



AVITA SOOKNANAN

Dr. Kajiura is a professor in the department of Biology within the Faculty of Science. Not only does she teach in the undergraduate Science program at McMaster University, she also maintains research in a variety of fields in Biology. These fields include organismal ecology, resource allocation and life history, the impact of biotechnology on physiology, endocrinology, nutrition, and analysis of the transgenic rat growth hormone model.

Dr. Kajiura began her post-secondary education at McMaster University, where she completed her undergraduate degree in the Biology program. As a student in the Biology program, Dr. Kajiura thoroughly enjoyed her undergraduate years. She found that it was a stimulating time in her life, as her undergraduate years facilitated her interest in Sciences, and specifically in Biology. Due to the great knowledge that her professors showed in their respective fields of research, Dr. Kajiura learned more efficiently as she found that her professors were highly motivated. In addition to this, it was undoubtedly visible that her professors were dedicated to assisting their students in succeeding within their respective programs.

As an undergraduate student, the majority of Dr. Kajiura's time was focused on her studies; however, she firmly believes that time management was most important to her success. Not only did Dr. Kajiura work at three different part-time jobs during the regular academic term, she also spent summers working as a research assistant in Dr. Dave Rollo's laboratory. Working in this lab was a valuable experience in Dr. Kajiura's life. In this area of work, she became familiar with experimental designs, methodologies, techniques, and analyses. Moreover, she was able to complete research and experiments with a range of organisms, which included plants, invertebrates, and vertebrates (i.e. Transgenic mice, cockroaches, slugs, terrestrial and aquatic snails, lizards, bees, ants, water striders, birds, rainbow trout, jewelweeds, burdock etc.). In addition to working, she would take summer courses at the university. Dr. Kajiura's experience as a research assistant, and the courses in her undergraduate years, came together to provide a strong basis of knowledge. In turn, the skills gained in her academic pursuit molded her aspiration to become a university professor.

However, choosing the domain in which to continue her post-graduate education was a difficult decision. In order for Dr. Kajiura to gather more information in many research areas, she decided to network in the McMaster Science community. By doing this, she took advantage of opportunities to speak to professors, upper level students, and graduate students. She also attended the Biology Society's "Meet the Profs Night" to ascertain connections amongst researchers in the Biology department.

In Dr. Kajiura's final years of undergraduate studies, she decided to continue her studies to obtain a M. Science and Ph.D. As a result, she completed her graduate studies at McMaster University and subsequently continued on as a doctoral candidate.

One of Dr. Kajiura's major fields of research includes working with transgenic mice. She began her initial research on transgenic mice while working on her Ph.D. with Dr. Rollo who acted as her supervisor.

Dr. Kajiura has published many articles on transgenic mice and growth hormones as well as accomplishing great advances in this field. In collaboration with Dr. Rollo's lab, Dr. Kajiura delved into the impact of genetically engineered growth enhancement in transgenic rat growth hormone mice. Essentially, transgenic rat growth hormone

(GH) mice carry multiple copies of rat growth hormone genes, and these are introduced through pronuclear microinjection. Such mice will achieve body sizes almost twice that of normal/regular controls. In Dr. Kajiura's previous research completed, she found that transgenic growth hormone mice do not increase their mass-specific feeding to pay for their elevated growth. Contrary to this observation, the efficiency of converting assimilated food into biomass is greatly improved in transgenic rat growth hormone mice. Conversely, resources from other physiological demands are raided in order to increase the effectiveness of growth. As a result, transgenic mice show signs of decreased reproduction, increased lethargy, and accelerated aging.

From this research, Dr. Kajiura showed that it is evident that the transgenic rat growth hormone model displays and represents a very powerful tool in biotechnology. She acknowledged that the transgenic mice model might be used to determine the different arguments for and against bio-engineered growth hormone enhancement in livestock, as well as with many other vertebrates.

Dr. Kajiura realizes that genetics has strongly impacted most individuals in society. She also believes that genetics, when integrated with the field of biotechnology, has greatly affected several areas such as medicine, agriculture, ecology, philosophy, ethics, law, and sociology. Dr. Kajiura was asked whether genetics will eventually be able to describe every disease, and she responded by saying, "Certainly; a description in terms of 'genetics' of a disease will assist in our understanding of a specific disease. However, one should also seek insights into the other integrated research areas; that is, maintain a holistic perspective."

Moreover, Dr. Kajiura thinks that even though genetics is a very important part to understanding diseases, one should also take into consideration the other areas of study (for example immunology, evolution, life history and ecology, physiology, philosophy and bioethics, etc.) and their relationship to genetics. Consequently, one will have an open view of the disease. In terms of Dr. Kajiura's research, the transgenic mice with extra growth hormones grew to extremely large sizes, as was expected. On the other hand, their large sizes were attained by diminishing other factors in their life history design, because GH mice are subject to such factors as short lives, reduced reproduction, tumors and lethargy. Accordingly, the transgenic-mice with an added amount of growth hormone gives a perspective in understanding the way this model can be applied to several fields of research (i.e. agriculture or to individuals with stunted growth).

Dr. Kajiura reiterated that her work with the department of Biology has been the most rewarding experience in her career. She firmly holds the belief that a rewarding experience is one in which a person helps others in society.

Her research on transgenic mice has been an extremely influential mechanism in understanding organism design concepts. For example, Dr. Kajiura indicated that in the

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Another type of fear expressed by the National Bioethics Advisory Commission is that parents who use NST to determine their child's genome will view their offspring as a product to benefit themselves, instead of lookout for the best interest of the child. (National Bioethics Advisory Commission, 1997). Again, the clearest way to illustrate this fear and its respective abuses is to propose another hypothetical scenario, which takes into account both fears expressed by the National Bioethics Advisory Commission.

A family has bought some skin cells of Michael Jordan and want to have a "copy". From the first day the child is born, he will likely be forced into basketball regardless of what the clone wants to accomplish or fulfill in his life. Firstly, the clone though genetically identical to Michael Jordan, may not be an adequate basketball player based on the nature vs. nurture theory. (Bornstein, 1997). The nature vs. nurture theory states that both heredity and environment play significant parts in determining the characteristics of an individual. Essentially, it is unknown to what degree Michael Jordan's environment (ie. coaches, practice, effort.etc.) determined his basketball talents and hence, it is not guaranteed that the clone would excel in basketball. Regardless, a child would be forced to play basketball because he might be taken advantage of, from an economic perspective. This economic situation might stem from the fact that the parents cloned the child based solely on financial incentives, which would add even more pressure on the child to perform. The emotional pressure on the child from both himself, his parents, and most likely society at large, clearly violates the clone's rights and is without a doubt unhealthy.

Ultimately, human cloning is the most influential and controversial bioethical issue since Darwin's Evolution. Risk assesment and the weighing of clonings potential benefits and harm, must be done cautiously, because the repercussions of any decision will revolutionize the new millennium. It is up to society to decide how much it will do so.

Professor in Focus (cont'd)

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into many facets of interest such as behaviour and cognition, feeding, immunology, physiology, genetics, reproduction, growth, and longevity. Because of this varied range of areas brought about through research, Dr. Kajiura's labs have contributed to several fields of study.

Dr. Kajiura stated, "It has been a pleasure exchanging insights about research with members of the McMaster faculty, students, and graduate students".

One piece of advice that Dr. Kajiura directed to students is, "always strive "to learn" and "to gain knowledge." She insists that in order to do this, students must maintain a high level of motivation and enthusiasm. In addition, she said that a person should not procrastinate, and he/she should take the initiative to plan their future careers.

Dr. Kajiura is a very confident professor who is readily available to assist her students. In her classes, she encourages students to take an active role in their learning, and in choosing their post-graduate careers. Dr. Kajiura also informs students that the department of Biology has a very resourceful Graduate Studies package that clearly outlines and notifies students about available programs. The package is extremely well prepared and organized by experts.

When Dr. Kajiura was asked if there was one aspect of which she would like to explore in her educational pursuits, she responded by explaining that when she looks through the undergraduate student calendar, as well as the graduate student calendar, she sees many interesting courses offered at McMaster University (in Science and in non-Science disciplines). Due to the fact that Dr. Kajiura is interested in gaining knowledge, she eagerly said "I would find any aspect interesting!"

Figure 1

Insertion of growth hormone genes into transgenic (organisms that contain genes from another species) mice.

