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Editorial

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The Sustainable Development of Forensic Research

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The development of forensic medicine is based on the advancement of scientific research. How to obtain effective achievement in continuous research is a problem for most forensic scholars. In my opinion, there are two points that should be emphasized. One is the acquirement and utilization of resources for scientific research. These resources include not only hardwares (physical means),

such as funds, equipment, but also softwares (immaterial resources), such as techniques, methods and ideas. On one hand, the advancement in medical science, biology and other related natural sciences has provided new techniques and has helped to expand research in the field of forensic medicine. On the other hand, recent technologies devised and critical imagination in different sub-disciplines of forensic medicine can synchronize and find new methods to solve old problems.

In the past, for instance, study of postmortem interval (PMI) estimation was based on observation of postmortem phenomena and simple detection of postmortem chemistry. Recently, PMI study has entered the molecular level with the use of Computer Image Analysis System, which can analyze postmortem degradation of DNA in various tissues and provide an estimation for PMI. Further, the improvement of statistical methods has also exerted a strong influence on forensic medical research. For statistical analysis, studies involving forensic 'time estimation' have replaced the 'simple linear equation' by the 'multi-variant nonlinear regression', which is supposed to give a more accurate and scientific approach to the results. The diatom test is another interesting point to consider. The detection rate, using common optical microscope, ,is not high because diatoms are achromophilous and are very difficult to identify against other impurities in water and body tissues residue. Hence, specific amplification of diatom's DNA by using PCR technique opens up a new way to detect diatom, which is much more objective and sensitive.

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Furthermore, the origin and development of "artificial neural network" (ANN), a mathematical simulation system of human brain's structure and function, will bring a entirely new method to forensic medical research in the future. Besides "time estimation", it can be used in many forensic fields like appearance recognition, fingerprint identification and bullet mark verification. So, we should be accustomed to innovations in all the other natural scientific subjects in order to cultivate new research ideas and methods and apply them to research in forensic medicine.

Another emphasis is the accumulation and virtuous circle of research findings. An achievement in science is usually the result of hard work of generations of researchers and the development of science requires persistent struggle. Therefore, effective accumulation of scientific research is of vital importance. Nowadays, each new study is carried out on the basis of massive pertinent literatures, and the results of that study would be published and be available as reference. Thus, the validity, reliability and integrality of published research paper have great influence on future studies. If one carries out an experiment based on questionable references, the outcome may probably be frustrating. Under the pressure of graduating or expecting promotion, individuals may even distort results in order to fulfill a paper's criteria. Then, the scientific research would fall into a vicious circle leading to unfavorable circumstances. Only with pragmatic, rigorous and serious attitude, can we take our scientific research into a favorable virtuous circle. Moreover, we should have a correct understanding of the relationship between innovation and accumulation in scientific research. Innovation is the soul of study work and is of utmost importance.

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Under this concept, everyone tries to do something which has never been presented before. I have known a master-degree applicant who performed a study using the same methods as his senior fellow but under a different temperatures and then compared the results. But his design did not go through because it was evaluated as being “mere repetition and lacking innovation”. As we all know, many researches in forensic medicine requires the collection and accumulation of a series of test data under different conditions and influential factors. Research in Forensic medicine should progress systematically, from methodology to animal experimentation and/or to investigation on human tissues. Without the systematic and continuous study, how would we make important breakthroughs and sustainable development in forensic medicine?

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