

# Thinking and Analysis of Integrating Ideological and Political Elements into Molecular Biology Course Teaching

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**Abstract:** In order to enable students to obtain rational identity and form correct values, cultivate and improve students' thinking and judgment, and enable students to have higher-order thinking ability to see reality through phenomena has become one of the main goals of personnel training in university. This paper first expounds the relevant content of molecular biology, then analyzes the necessity and feasibility of carrying out ideological and political education in molecular biology classrooms, and finally discusses the relevant strategies for integrating ideological and political elements into the teaching of molecular biology courses. It is expected to provide reference for the reform and practice of ideological and political teaching of molecular biology course, and help improve the quality of personnel training for biology majors in colleges and universities.

**Keywords:** Ideological and political elements; Molecular biology; Course teaching

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The development of ideological and political education is endowed with great significance in China, it was established as a prominent position in the ideological and moral construction of college students. Chairman Xi pointed out that the ideological and political theory course should make good use of the main channel of professional classroom teaching in colleges and universities, and while constantly improving and enhancing the ideological and political education policy, it also meets the needs of students' ideological growth and development. In recent years, in the process of higher education personnel training, the organic integration of professional courses in various fields with ideological and political elements to play the role of collaborative education has gradually become an important measure and focus of higher education reform<sup>[1]</sup>. This paper mainly discusses the two-way cohesion between molecular biology teaching and course ideological and political work in college education. According to the syllabus of molecular biology, combined with the relevant content of ideological and political education, the ideological and political elements in the course are deeply excavated, and the deep integration development strategies of molecular biology classroom teaching and ideological and political teaching were analyzed.

## 1. Introduction to Molecular Biology Course

Molecular biology is a science that explain the structure and function of biological macromolecules at the molecular level to clarify the nature of life phenomena. Since human beings entered the 21st century, governments around the world have attached great importance to the frontiers of the development of life science. Scientists in various fields of life science are also working together to tackle key problems. The mystery of genes, those far-sighted investors also spend huge sums of money to fund the research and development of biotechnology, the news media in the information age is more focused on the application results of biotechnology, and the public is more concerned about the contribution of genetically modified technology to the development of human society influences. According to this, molecular biology had been regarded as a core course for life science majors in most colleges and universities.

As a university professional course that studies the essence of life, the goal of molecular biology is to use scientific research to discover the genetic structure and function of humans and other organisms. Although ordinary people are very unfamiliar with molecular biology courses, the impact of molecular biology can be seen everywhere in our daily life. For example, paternity testing, genetic diseases and influenza, and even rice, flour and oil, brewed drinks, etc. involved in the daily diet all involve the application of molecular biology-related theories and technologies. The development of these molecular biology theories and technologies has improved our quality of life to varying degrees and escorted the sustainable development of human society. In addition, the opening of the molecular biology course allows students to fully understand the development history and scientific research process of molecular biology, and master the transmission and expression rules of genetic information. The use of molecular biology-related techniques to practice genetic material in teaching can effectively cultivate and exercise students' creative thinking and scientific research thinking, which making molecular biology a compulsory course for biology-related majors.

## 2. Exploration on the integration of molecular biology classroom teaching and ideological and political elements

To realize the goal of “foster virtue through education”, it is necessary to make good use of the major advantages of professional courses, strengthen ideological and political education based on socialist core values, and strengthen young students' ideological loyalty to the party and the people. A sense of responsibility to society. In the ideological and political education reform work of colleges and universities, curriculum ideology and politics, compared with traditional ideological and political classrooms, combines relevant knowledge in different professional fields, and has incomparable professionalism and systematic-ness in traditional classrooms. Combined with relevant professional knowledge, through the baptism of ideological and moral qualities in concepts, young students can clarify their life goals and shoulder the missions and heavy responsibilities that they shoulder in times of peace<sup>[1]</sup>.

With the continuous improvement of my country's emphasis on basic research, the field of molecular biology has achieved relatively fruitful results. In the classroom of molecular biology, introduce of these new developments can enable students to fully understand the basic frontiers of molecular biology and the outstanding contributions made by Chinese scientists in this field, which will have a great impetus for cultivating students' innovative consciousness and enhancing students' national identity and national self-confidence<sup>[2]</sup>. By enhancing the ideological and political awareness of teachers, ideological and political education for students is carried out on the basis of teachers' demonstration, so that teachers can guide students while teaching professional knowledge. This will help students to form a correct outlook on life and values, achieve the goal of comprehensive curriculum education, and realize the organic unity of ability and value<sup>[3]</sup>.

### **3. Strategies for Integrating Ideological and Political Elements into Molecular Biology Course**

In the process of preparing lessons for the molecular biology course, teachers should fully explore the ideological and political elements, and integrate our country's excellent traditional spiritual culture into the teaching content. In the teaching process, the research frontiers of molecular biology and the latest scientific research achievements accomplished by Chinese scientists are added, and the ideological and political education of students is subtly carried out, as to strengthen students' cultural self-confidence and national identity. Teachers can integrate ideological and political elements into classroom teaching through many ways. The following focuses on two aspects.

#### **3.1 Cultivating and strengthening teachers' ideas of curriculum ideological and political education**

To hold teacher training activities, all teachers of the course group should establish the educational concept of curriculum ideology and politics, improve the teaching skills of integrating curriculum ideology and politics into teaching design, and better play the leading role of teachers in classroom teaching. Schools should organize various teaching and research activities, such as on-site teaching design, seminars and exchanges, etc. to train teachers of professional courses and guidance, so that teachers can establish ideological and political awareness of courses, improve the ability to unify teaching with ideological and political knowledge and professional knowledge, improve traditional teaching methods, and accept new teaching ideas. Schools should strengthen molecular biology teachers' learning and understanding of new educational concepts, and advocate a learning method in which teachers and students discuss together.

Professional teaching teachers should take morality and cultivate people as the fundamental requirement of teaching, and ensure the correctness of the direction of educating people in classroom teaching by constructing the framework of the curriculum ideological and political education system. In addition, it is necessary to promote students to actively carry out social practice activities in accordance with the relevant policies of the school. Teachers themselves should also focus on external exchanges on professional knowledge and ideological and political elements, conduct more discussions and exchanges with other teachers, accumulate experience, improve ideological and political teaching skills, and fully integrate course ideology and politics into the teaching of molecular biology courses to achieve a two-way balance between knowledge and value.

#### **3.2 Integrating ideological and political elements into the teaching process**

The rapid development of biotechnology is inseparable from the contribution of Chinese scientists. Chinese biological scientists have played a vital role in promoting the development of biological sciences in our country and even in the world. Through explaining the milestone scientific and technological breakthroughs made by Chinese scientists, reflects the spirit of seeking truth and striving and innovative of Chinese scientists. The scientific spirits are worth learning and inheriting by the youth. This also shows how important and necessary it is to carry out ideological and political teaching in molecular biology classrooms<sup>[4]</sup>.

The development of molecular biotechnology is inseparable from scientists' spirit of continuous innovation and truth-seeking. In 1953, J. Watson and F. Crick were inspired by the study of DNA crystal X-ray diffraction pictures provided by Wilkins, finally proposed the famous DNA double helix structure model. The discovery of DNA structure is a milestone in the history of molecular biology. The discovery of the double helix structure of DNA reflects the abstract thinking ability of scientists, as well as the spirit of cooperation and communication. Through pneumococcus transformation experiments and phage infection experiments, scientists determined that the molecular nature of genetic material is DNA, and "DNA molecules have genetic continuity between parents and offspring" was concluded, which suggests that scientific research requires diligent thinking and innovation. Through the explanation of these scientific stories, students can more clearly understand that the development of science and even the development of human society are inseparable from the spirit of innovation. Cultivating the spirit of innovation of contemporary college students is related to the development of a country. Cultivating college students' innovative and pragmatic spirit will help promote the great rejuvenation of Chinese nation and the realization of China dream<sup>[5]</sup>.

In addition, there are many ideological and political elements in the course. For example, in DNA replication and repair, the initial stage is more complicated, so it can correspond to the idea of "everything is difficult at the beginning", help students establish correct values, and gradually form correct value orientations to improve their comprehensive quality. For another example, the gene editing technology can be used to improve the traits of crops, such as prolonging the preservation time of food. However, some researchers

ignored basic ethics, and arbitrarily used this technology for human interference during embryonic development. It warns students that in scientific research, they should not only actively innovate and bravely explore, but also remember that do not lose our basic ethics for the sake of immediate fame and wealth<sup>[5]</sup>.

#### 4. Summary

To organically integrate professional courses with ideological and political education to achieve the goal of “foster virtue through education”, teachers need to continuously improve their ideological awareness, break through traditional teaching ideas, fully explore the ideological and political elements in professional courses, and carry out ideological and political teaching design reasonably. In this way, students' inheritance and development of excellent national culture and socialist core values will be strengthened in a subtle and silent way. At the same time, it helps students to establish a correct outlook on life, value and world, and enhances students' sense of responsibility and mission in striving for national scientific and technological development and national rejuvenation, which will help to cultivating high-quality talents with all-round development for the country.

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