



CCCTC  
WEBSITE  
PREVIEW

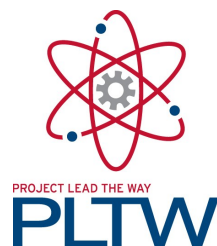
# Biomedical Sciences DEPARTMENT



**Project Lead the Way Biomedical Sciences gives students a glimpse into the world of biomedicine through computer-based and hands-on activities and projects. This dynamic program uses hands-on, real world problems to engage and challenge students. This program is composed of four AP level classes designed for students who have career interests in the biological sciences, medical research, and biotechnology. In 2011, the CCCTC Biomedical Sciences program was one of sixteen schools in the nation to be named a PLTW Model School.**

## COLLEGE CREDITS AND CERTIFICATIONS:

- Earn Transcribed college credits through Stevenson University. (DNA and Cell Bio.)
- Earn articulated college credits through Frederick Community College.



## MAJOR UNITS OF STUDY:

- **Principles of the Biomedical Sciences (PBS)**

Students investigate various health conditions including heart disease, diabetes, sickle-cell disease, hypercholesterolemia, and infectious diseases. They determine the factors that led to the death of a fictional person, and investigate lifestyle choices and medical treatments that might have prolonged the person's life. The activities and projects introduce students to human physiology, medicine, and research processes.

- **Human Body Systems (HBS)**

Students examine the interactions of human body systems as they explore identity, power, movement, protection, and homeostasis. Students design experiments, investigate the structures and functions of the human body, and use data acquisition software to monitor body functions such as muscle movement, reflex and voluntary action, and respiration. Exploring science in action, students build organs and tissues on a skeletal manikin, work through interesting real world cases and often play the roles of biomedical professionals to solve medical mysteries.

- **Medical Interventions (MI)**

Students investigate a variety of interventions involved in the prevention, diagnosis and treatment of disease as they follow the life of a fictitious family. Students explore how to prevent and fight infection; screen and evaluate the code in human DNA; prevent, diagnose and treat cancer; and use molecular biology techniques to treat disease. Through these scenarios, students are exposed to a range of interventions related to immunology, surgery, genetics, pharmacology, medical devices, and diagnostics.

- **Biomedical Innovation (BI)**

Students design innovative solutions by working through progressively challenging open-ended problems, addressing topics such as clinical medicine, physiology, biomedical engineering, and public health. They have the opportunity to work on a research project where a portion of a glyceraldehyde-3-phosphate dehydrogenase (*GAPDH*) gene from plants is cloned, inserted into a plasmid vector, and the sequence analyzed through bioinformatics. This project offers the students the opportunity to perform novel research using a wide range of lab techniques and to publish their sequencing and bioinformatic results in NCBI's GenBank. At the end of the project, students are expected to write a scientific paper and present their work to an audience of STEM professionals in the form of a scientific poster.

## SCHEDULE:

Spring of Junior Year (2 credits)  
Fall of Senior Year (2credits)

Want to know more? Check out our website at:

[www.carrollk12.org/ctc](http://www.carrollk12.org/ctc)

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College & Career Opportunities