

**Iowa State University Library
Collection Development Policy
Department of Genetics, Development, and Cell Biology**

I. General Purpose

Resources are selected to support the instructional and research needs of faculty, graduate, and undergraduate students in the Department of Genetics, Development, and Cell Biology (GDCB). GDCB is one of the ISU departments that focuses on life sciences research. “GDCB focuses primarily on biological function at the cellular and subcellular level, using molecular, genetic, computational and biochemical approaches to understanding biological function. At ISU, GDCB overlaps with and complements the Department of Biochemistry, Biophysics & Molecular Biology (BBMB) at the molecular scale and the Department of Ecology, Evolution and Organismal Biology (EEOB) at the organismal scale.” (<http://www.gdcb.iastate.edu/info/about.html>) The department is involved in undergraduate programs (Biology, Bioinformatics and Computational Biology, Genetics) and offers graduate work leading to M.S. and Ph.D. degrees. In addition, there are many other programs at Iowa State University (ISU) whose faculty and students use this collection.

The types of materials collected for the department support a wide range of activities, from undergraduate education to faculty research needs. The types of material must therefore vary from popular non-technical literature in the fields of genetics, development, and cellular biology to extremely specialized material used by in depth researchers.

II. History

The life sciences have been an important part of Iowa State University’s (ISU) instructional and research programs since its first students arrived in 1869. Botany at ISU began when the Board of Trustees in 1859 designated four professorships. In 1870, Charles E. Bessey accepted one of these, thus implementing Botany through its graduate work and established the Iowa State Herbarium.

The Department of Zoology was founded in 1872. As the University developed, the Zoology department became part of the Division of Science Related to the Industries. In 1962, the department was combined with Entomology to become the Zoology and Entomology Department. In 1975, Zoology was separated from Entomology and became the Zoology Department until 1990. The department remained within what became the College of Liberal Arts and Sciences.

Genetics has been studied at Iowa State since 1917. The Genetics Department was created in 1922 within the School of Agriculture.

In 1990, the Zoology and Genetics Department was founded by the combination of the Zoology and Genetics departments. It was jointly administered by the colleges of Liberal Arts and Sciences and Agriculture.

In 2001 and 2002 the colleges of Liberal Arts and Sciences and Agriculture began to consider a reorganization of the basic life science departments at ISU. Plans were established to implement a major reorganization of these departments to better reflect how biology is organized at a more systematic level. The GDCB Department was founded in July 2003, and it focuses on biological function at the cellular and subcellular levels. The department was created by a portion of faculty from the former Zoology and Genetics (23 faculty) and Botany (7 faculty) departments. At the same time, the Department of Ecology, Evolution, and Organismal Biology (EEOB) was also created. The remaining faculty from the Zoology and Genetics Department (14 faculty) and the Botany (12 faculty) Department moved to the newly created Department of Ecology, Evolution, and Organismal Biology (EEOB). Four faculty from Zoology and Genetics moved to the Department of Biochemistry, Biophysics, and Molecular Biology (BBMB). GDCB is jointly administered by the College of Agriculture and Life Sciences and the College of Liberal Arts and Sciences.

III. Iowa State University Program

GDCB plays a central role in undergraduate education. The GDCB Department and the EEOB Department co-administer the undergraduate degree in Biology. This degree attracts a large number of undergraduates. GDCB, EEOB, and BBMB administer the undergraduate genetics program. A new undergraduate major (Fall 2007) in Bioinformatics and Computational Biology is administered by GDCB, Computer Science, and Mathematics.

The Department is actively involved in several interdepartmental programs leading to Master of Science (M.S.) or Doctor of Philosophy (Ph.D) degrees. The Department offers graduate majors in: Bioinformatics and Computational Biology (BCB), Interdepartmental Genetics (IG), Microbiology, Molecular, Cellular, and Developmental Biology (MCDB), Interdepartmental Neuroscience, Interdepartmental Plant Physiology, and Interdepartmental Toxicology. Many departments participate in the interdepartmental programs. Departments include: Agronomy, Animal Science, BBMB, EEOB, Entomology, Food Science and Human Nutrition, Horticulture, Natural Resource and Ecology Management, Plant Pathology, Veterinary Microbiology and Preventive Medicine, and Veterinary Pathology.

GDCB faculty are also associated with the following campus initiatives: Bioeconomy Initiative, Baker Center for Bioinformatics and Biological Statistics, the Center for Integrated Animal Genomics, the Plant Sciences Institute, and the Crop Genome Informatics Laboratory.

GDCB faculty and staff have also been involved in the formation of start-up companies. Eric Henderson is the founder and CEO of BioForce Nanosciences. David Wright,

Jeffrey Townsend, and Dan Voytas founded Advance Genome Technologies. GDCB collaborator, Charles Link, is the Founder and CEO of NewLink Genetics, located at the ISU Research Park.

IV. Subject Boundaries

The collection includes parts of the following sections of the Library of Congress classification schedule: QH, QK, QL, QP, and QM. (See Section XII for specific ranges.) Because of the interdisciplinary nature of GDCB, EEOB, and BBMB, there is a significant amount of subject overlap among the faculty and student researchers in these departments. Consequently, much of the related literature of potential interest to GDCB faculty and students is collected in other subject areas such as agriculture (e.g. animal science, horticulture, veterinary medicine, etc.) and the other biological sciences (e.g. biochemistry, molecular biology, botany, etc.). From the Library's perspective, one of the ongoing challenges of the life sciences reorganization has been determining what call number ranges are assigned to the bibliographers associated with the above departments. There is ongoing communication and collaboration among the bibliographers responsible for these areas. In the event of any future journal cancellation projects, multiple bibliographers and academic departments would be consulted before final decisions were made.

V. General Collection Guidelines

A. Linguistic.

The collection is mostly composed of materials in the English language although materials are collected in other languages, when necessary.

B. Geographical Areas.

The department's interests are not geographically dependent.

C. Types of Materials Collected.

The library collects journals, other serial publications, monographs, conference proceedings, technical reports, maps and electronic databases. The library receives relevant government materials, especially technical reports, through the GPO depository program.

D. Format of Materials Collected.

Materials are acquired in print, microform, compact disc, DVD, and on the World Wide Web. Journals are collected in print and electronic formats. Web access to full-text journals is desirable and the preferred format among faculty and students. Monographs are usually collected in print format (which may include supplementary materials in CD-ROM). Electronic books are selectively purchased. No format is excluded if the material is relevant to the collection.

VI. Specific Collection Guidelines

The collection includes materials that meet the teaching and research needs of the department. High priority is given to requests from faculty and students. The emphasis is on the collecting of current literature. See Section VII for a more detailed list of GDCB research priorities and specific organisms of interest to current GDCB faculty. Model organisms of research importance include: Arabidopsis, maize, rice, Drosophila, zebrafish, Caenorhabditis elegans, Chlamydomonas reinhardtii, and Saccharomyces cerevisiae.

General textbooks and laboratory manuals with an undergraduate emphasis are not purchased. Textbooks written at the graduate level are selectively purchased based on the potential usefulness of the book to serve as a general reference or introduction to the subject.

Books related to topics such as cloning, genetic engineering, genomics, stem cells, ethical issues (all popular topics in the media) are selected for the Leisure collection. These are useful at the undergraduate level (e.g. research papers, speeches).

Books published about human stem cells at the professional/scholarly level are selectively purchased.

Human anatomy atlases are selectively purchased.

New title notification slips for books classed from QP 301 – QP 336 (Musculoskeletal system) are often forwarded to the Kinesiology bibliographer. These titles are related to biomechanics and exercise science.

New title notification slips for books classed from QP 351 – QP 495 (Neurophysiology and neuropsychology) are often forwarded to the Psychology bibliographer. There are a large number of books published in this call number range every year. Books about neuropsychology, cognitive neuroscience, and memory are more likely to be purchased by the Psychology bibliographer.

New title notification slips that not purchased by the GDCB bibliographer are often forwarded to the Veterinary Medicine bibliographer. Basic textbooks, atlases, and other genetics topics may be of interest.

VII. Detailed Subject Areas

The following information was taken from the GDCB website page that describes the department's research focus (<http://www.gdcb.iastate.edu/research/>) and faculty research programs.

The GDCB Department is dedicated to biological discovery and excellence in undergraduate and graduate education, with research and teaching missions

encompassing fundamental cellular and subcellular processes, including genome dynamics, cell structure and function, cellular metabolism, cellular response to environmental and developmental signals, and molecular mechanisms of development. The GDCB Department has identified 3 primary focus areas:

- Genome Dynamics: Structure, function, and activity of the genome
- Cellular Biology: Molecular control of cellular structure and function
- Development: Mechanisms of multicellular development

Computational biology and metabolic networking, as well as instructional and pedagogical innovation are integrated into multiple focus areas.

- Computational Biology and Bioinformatics: Integration of computational approaches
- Pedagogy: Instructional and pedagogical innovation
- Metabolic Networking: Integration of metabolism into systems biology

Current research areas and organisms of interest of GDCB faculty include:

- Biogenesis and functions of the plant vacuole (*Arabidopsis*)
- Cell fate specification (maize)
- Plant genomics and molecular genetics
- Cell migration and programmed cell death (*Drosophila*)
- Protein structure and function
- Tumor angiogenesis (zebrafish)
- Statistical methods for evolutionary genomics
- Interface between biology and nanotechnology
- Soybean and tobacco genetics
- Shoot development in plants (*Arabidopsis*)
- Membrane biology and signal transduction in mast cells
- Maize genetics
- *Caenorhabditis elegans* genetics
- Developmental neurobiology
- Development and regeneration of vertebrate visual systems
- Calcium signaling during fertilization and membrane resealing
- Photosynthetic carbon metabolism and metabolic regulation of gene expression in plants and photosynthetic microbes (*Chlamydomonas reinhardtii*)
- Retrotransposable elements (*Saccharomyces cerevisiae*)
- Rice bacterial blight
- Plant steroid hormones, brassinosteroids

VIII. Other Resources Available

Major electronic indexes relevant to GDCB include: *Biosis Previews*, *Biological and Agricultural Index*, *CAB Abstracts*, *PubMed*, *Web of Science*, and *Zoological Record*.

Because of the increasing amount of bioinformatics research at ISU, several electronic books were purchased in 2007 related to this topic. Because of the interdisciplinary nature of this area, these books are utilized by researchers from many academic departments.

Conversations in Genetics: An Oral History of Our Intellectual Heritage in Genetics is a 3 volume (15 DVDs) “collection of conversations with geneticists who have made major contributions to the conceptual foundations of modern genetics.”

Related materials can be found in the library’s collections of materials for agriculture, veterinary medicine, botany, biochemistry, chemistry, and related disciplines.

GDCB Information

- GDCB website, <http://www.gdcb.iastate.edu/>
- College of Liberal Arts and Sciences, October 2007 Report to the President and Provost (<http://www.las.iastate.edu/main/report.shtml>). This report includes GDCB’s annual report.
- Undergraduate Biology program, <http://www.biology.iastate.edu/>
- Undergraduate Genetics program, <http://www.public.iastate.edu/~ugradgen/>
- Undergraduate Bioinformatics and Computational Biology program, <http://www.las.iastate.edu/bcb/>
- Graduate programs, <http://www.gdcb.iastate.edu/graduate/>

IX. Cross-references to Collection Policies

Biochemistry, Biophysics, and Molecular Biology
Ecology, Evolution, and Organismal Biology

X. Creation date

Draft written in August 2003 by Richard Llewellyn

XI. Revision History

Extensively revised in December 2007 by Andrea L. Dinkelman

XII. LC Class(es), if applicable.

QH301 – QH323.5 Biology (General). Biometry. Biomathematics.
QH324.2 Bioinformatics
QH426 Genetics
QH471 – QH499 Reproduction. Development. Regeneration.
QH507 Information theory in biology
QH 573 – QH671 Cytology
QK710 – QK899 Plant physiology
QL 951 – QL991 Embryology
QM1 – QM695 Human anatomy. Human and comparative histology. Human
embryology.
QP1 – QP285 Physiology
QP301 – QP336 Musculoskeletal system
QP341 – QP345 Electrophysiology
QP351 – QP495 Neurophysiology and neuropsychology

XIII. Bibliographer name

Andrea L. Dinkelman

Last updated 12/17/07