IB FUTURE PLANNING

SUMMARY OF PREVIOUS DISCUSSION
Input from meetings:
March 22, April 4 – with Dean Frederick
April 26 and 29 – IB faculty

- Evaluated strengths
- Looked for linkages among the strengths
- Looked for future growth potential
Prior discussions have identified three departmental themes.
Activity 1. Identify specific strengths related to these three themes.
From Brainstorming Exercise - Health-Related Strengths

<table>
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<tr>
<th>Health or Pre-Health?</th>
<th>Student numbers ($) and interest.</th>
<th>BIO courses largely focused on pre-health.</th>
<th>Advanced Lab Training</th>
<th>BS Biology Pre-Medical Concentration</th>
<th>MS Biology- New Pre-Health Preparation Non-Thesis Option</th>
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Health-Related Courses

- Anatomy & Physiology
- Genetics/Molecular Genetics Lab
- Physiology/Physiology Lab
- Advanced Physiology/Clinical Anatomy
- Comparative Vertebrate Anatomy
- Nutrition/Animal Nutrition
- Human Reproduction
- Medicinal Plants
- Pharmacology
- Environmental Toxicology
- 4/5 CUREs sections
Brainstorming Results: Sustainability Strengths - Topics

Human-Wildlife Interactions
Freshwater Science
Chemical Ecology
Ecosystem Science
Urban Ecology
Plant Science
Microbial Ecology
Environmental Systems
Organismal Biology
Current Research Strengths

- Plant & Animal Health
- Ornithology
- Wildlife
- Plant Biology
- Ichthyology
- Water Quality Aquatic Systems
- Environmental Health
- Microplastics
- Env Microbiology
Sustainability Strengths - Structural

- Active Departmental Research (ecology-focused)
- Student Numbers
- Experiential Learning
- Student Belonging
- Applied Science
- Inter-Disciplinary Approaches
Brainstorming Exercise - Science Education Strengths

- Department of the future?
- Student Numbers/Interest/Variety
- Variety of Pedagogies / Teaching Success
- Experiential Learning
- Strength in Basic Science
- Large Introductory / Core Courses
- Grants/Funding ($$$)
- Diverse Group of Faculty with Success in this Area

Department of Integrative Biology
Activity 2: Identify connections between the three themes and areas for future development.

What do our stakeholders (students and employers) need in 5, 10, 15 years?

How do we connect our strengths/research areas to the needs of students and future employers?
Health & Sustainability Connections

Conceptually:
- Environmental problems are human health problems
  - Climate Change, Pollution, Ecosystem Disruption, Wildlife/Endangered Species Decline
- Human health is irrevocably tied to the health of the environment and sustainable practices.

Structurally:
- Targets emerging connections while building upon existing departmental strengths.
  - Environmental Science/Ecology, Pre-Health Professions Training, Scientific Teaching & Learning.
- Allows for increased clarity of focus and identity formation.
The One Health Initiative

Relatively new global initiative recognizing the linkage between the health of people, animals and ecosystems.

World Health Organization

“One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems.”

Centers for Disease Control and Prevention

“One Health is a collaborative, multisectoral, and transdisciplinary approach—working at the local, regional, national, and global levels—with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, plants, and their shared environment.”

USDA

“The health of animals, people and the environment is connected. The ‘One Health’ approach is the collaborative effort of the human health, veterinary health and environmental health communities. Through this collaboration, USDA achieves optimal health outcomes for both animals and people.”

USGS

“One Health is a collaborative approach – working at the local, regional, national, and global levels – with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals (terrestrial and aquatic), plants, and their shared environment.”
Specific Topics which Link our Strengths *(a starting point)*?

<table>
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<tr>
<th>Plant and Animal Health</th>
<th>Environmental Health</th>
<th>Human Health</th>
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<tbody>
<tr>
<td>Increasing allergens</td>
<td>Water quality and quantity</td>
<td>Heat-related illness</td>
</tr>
<tr>
<td>Changes in vector ecology</td>
<td>Environmental degradation</td>
<td>Respiratory allergies, asthma</td>
</tr>
</tbody>
</table>

**Climate Change**
- Direct effects – breathing, eating, or drinking
- Developmental and reproductive problems
- Indirect effects

**Ecotoxicology**
- Human-animal contact
- Plant-pollinator interactions
- Predator-prey dynamics

**Disease Ecology**
- Loss of biodiversity and habitat
- Natural resource exploitation
- Environmental degradation

**Emerging Infectious diseases**
- Zoonotic diseases

**Impacts to food chain**
- Developmental and reproductive problems
- Abnormalities in chromosomes
- Adverse effects to nervous systems

**Water quality**
- Increases in diseases from changes in vector ecology

**Environmental degradation**
- Increases in diseases from changes in vector ecology
Brainstorming Results
Strengths to Build Upon / Areas for Growth

- Organismal Biology & Physiology
- “-omics”
- Clinical Health/Techniques (UT Health Partnerships)
- Integrated Research Labs

- Ecology (Plant/Animal)
  - Disease Ecology
  - Quantitative Ecology
  - Terrestrial Ecology
  - Ecotoxicology
  - Experiential Learning / UG Research
  - Basic Biology – ES Connections

- Ecosystem Science (biotic & abiotic)
- Global Change Biology
- Adaptive Systems/Resilience
- Innovative Pedagogies
Some of the Proposed Departmental Names:

- Department of Biology, Health, and the Environment
- Department of Biology and Environmental Health Sciences
- Department of Biology, Biomedicine, and Environmental Sciences
- Department of Biology, Pre-health, and Environmental Science
- Departmental of Biology and Sustainability
- Department of Biology and Environmental Science
- Department of Biological & Environmental Systems.
For the near future, we propose a department structure; however, we feel that it is important to develop autonomy among the groups in the future through a school structure, with each group becoming a department within a school.
Mission Statement

We inspire and prepare current and future generations to enact positive change by solving complex multi-disciplinary challenges related to biological systems, health, and sustainability.
Vision Statement

Our department is dedicated to transformative education, pioneering research and impactful outreach in the fields of human health, plant & animal health, and environmental health.

We are committed to advancing knowledge and fostering understanding of the intricate connections between these domains, with the ultimate goal of opening pathways of discovery related to biological systems, health, and sustainability.

In taking a multi-disciplinary approach based on innovative pedagogies and experiential learning, we aim to prepare the next generation of scientists, educators, and health practitioners to develop holistic solutions to pressing challenges ranging from emerging diseases to biodiversity loss to climate change.