Having benefited from the experience gained during 1997-98, we look forward to an even more enhanced ability to continue advanced research and accomplish that which will benefit society and play a key role in providing a graduate education second to none.

We are grateful to the numerous government agencies, corporations, foundations, local agencies and other sponsors who made our contributions possible.

And we congratulate our faculty, staff and graduate students for their significant accomplishments in this report.

Three representative examples are described in this report of the benefits to the community and to the state. There are additional significant economic impacts on our community concerning the research budgets of our various colleges and research sponsors. Sustained and increased funding is critical to our ability to continue advanced research and training grants in 1997-98.

The University of Florida is a major, public, comprehensive, land-grant, research university. The state's assets of about $60 million and in 1997-98.

The University of Florida Research Foundation (UF Research Foundation) is the steward for the technology transfer process and through the Office of Technology Licensing holds an intellectual property portfolio of more than 800 active patents and 800 active pending applications. It has licensed more than 100 technology transfer products for public use, and the proceeds can be very significant in the future.

The economic impact of our research activity translates into significant benefits to the community and play a key role in providing a graduate education second to none.
### Sponsorship of Research and Education Center

#### Federal and Non-Federal

- Federal: $80.3 million from the National Institutes of Health (NIH), $19.1 million from the National Science Foundation (NSF), $14.8 million from the Department of Energy (DOE), and $11.0 million from the Department of Agriculture (USDA).
- Non-Federal: $140 million from Gatorade, $139 million from other corporate sponsors.

#### Corporations

- Increased 46 percent, with an average 10.4 percent growth per year. This compares with a 53 percent increase in overall research sponsorship during the same four-year period.

#### Foundations and Non-Profit Organizations

- Tripling of awards from foundations and non-profit organizations from $11.7 million in 1994 to $35.6 million in 1998.

### Biotechnology and Licensing

#### Patent and Licensing Activity


#### Technology Transfer Income


### Biotechnology and Drug Design

#### Bioglass™

- Created by University of Florida materials scientist Larry Hench, is the only known man-made substance capable of forming a natural bond to human bone.
- Bioglass™ is a mainstay in the dental industry, where it is used to regenerate the alveolar bone lost to periodontal disease. The University of Florida has licensed Bioglass™ to USBiomedics, the company to which UF has licensed the technology.

#### Polyamine Analogues

- UF Graduate Research Professor Raymond Bergeron has spent more than two decades developing polyamine analogues, which have been proven effective in stopping the uncontrolled growth of cancer cells, but do not perform the functions required for cell growth.
- Polyamines are present in all human cells and they are essential to cell growth and proliferation.
- Cancer cells have higher concentrations of and rely more on polyamines than normal cells, so Bergeron's research focuses on developing polyamine analogues, which have been proven effective in stopping the uncontrolled growth of cancer cells.
- The polyamine analogues Bergeron has developed gain entry to the cell because of their similarity to natural polyamines. But once inside the cell, the analogues substitute themselves for the naturally occurring polyamines, but do not perform the functions required for cell growth.
- The analogues have been proven effective in stopping the uncontrolled growth of cancer cells.

### Bonding to Bone

#### Hydroxyapatite

- UF has licensed hydroxyapatite technology to Lavoisier, Inc., a company that is developing a new type of bone graft material.
- The company is using the technology to develop a new type of bone graft material that can be used to repair damaged bones.

#### Laser Ablation

- UF has licensed laser ablation technology to a company that is developing a new type of cancer treatment.
- The technology uses a laser to destroy cancer cells by destroying the blood supply to the tumor.

#### Delivery Systems

- UF has licensed delivery system technology to a company that is developing a new type of drug delivery system.
- The technology uses a miniaturized pump to deliver drugs directly to the tumor site.

### Other Technologies

- UF has licensed a variety of other technologies, including materials for regenerative medicine, bioactive glasses, and drug delivery systems.

### Economic Impact

- In FY 1997-98, University of Florida-based technologies generated more than $179 million in revenue, representing a 48 percent increase over the previous fiscal year.
- This revenue is derived from license fees, royalty payments, and other forms of compensation.
- The University of Florida's Technology Licensing Office (TLIO) manages the university's intellectual property portfolio, which consists of more than 500 patents and 300 trademarks.

### Deciphering Drug Design

- UF has a unique capability to decipher the design of new drugs and technologies.
- UF researchers have developed a new approach to drug discovery that involves the use of computational chemistry to predict the structure and function of new compounds.
- This approach has been used to develop new drugs for the treatment of cancer, diabetes, and heart disease.

### Technology Transfer

- UF has a strong commitment to technology transfer and has established strong relationships with industry partners.
- UF researchers have licensed their technologies to more than 200 companies, generating more than $1 billion in royalty payments and licensing fees over the past decade.

#### Technology Transfer Examples

- UF has licensed technology to companies that are developing new products in the areas of regenerative medicine, materials science, and drug delivery.
- UF researchers have also licensed technology to companies that are developing new technologies in the areas of biotechnology, nanotechnology, and chemistry.

### Fiscal Year Breakdown

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Total Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989/90</td>
<td>$10.0 million</td>
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<tr>
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<td>$40.0 million</td>
</tr>
<tr>
<td>1997/98</td>
<td>$45.0 million</td>
</tr>
</tbody>
</table>

### Note

- Data for patent applications filed and patents issued include new filings, continuations-in-part (CIP), continuations, divisionals, and reissues.
- The University of Florida has had an extensive portfolio of international patents.