LEARNING OBJECTIVES

• Explain the principles and limitations of hormone measurements (RIA, ELISA) and bioassays
• Explain the classification of endocrine pathologies
ASSESSMENT OF FUNCTION

**TOO MUCH:** hyper secretion, hormone excess

**TOO LITTLE:** hypo-secretion, hormone insufficiency

**TARGET CELL RESISTANCE:** unresponsive

**JUST RIGHT:** normal or eu-secretion, works fine!
Competitive Binding Assay

- High sensitivity and High specificity
BIOASSAY = function?

Low plasma glucose

Hypothalamus

CRH

Anterior Pituitary

ACTH

Adrenal Cortex

CORTISOL
BIOASSAY: suppression

Low plasma glucose → Hypothalamus → CRH → Anterior Pituitary → ACTH → Adrenal Cortex → high CORTISOL

Suppression test: give Dexamethasone to inhibit ACTH and cortisol release in H-P-Adrenal axis
**BIOASSAY: stimulation**

- Low plasma glucose
  - Hypothalamus
    - CRH
    - Anterior Pituitary
      - ACTH
      - Adrenal Cortex
      - Low CORTISOL

Stimulation test:
- give ACTH to stimulate cortisol release in H-P-Adrenal axis
# CLASSIFICATION OF ENDOCRINE PATHOLOGY

<table>
<thead>
<tr>
<th>Site of dysfunction</th>
<th>Tertiary</th>
<th>Secondary</th>
<th>Primary</th>
</tr>
</thead>
<tbody>
<tr>
<td>hypothalamus</td>
<td>_____ CRH</td>
<td>_____ CRH</td>
<td>_____ CRH</td>
</tr>
<tr>
<td>pituitary</td>
<td>_____ ACTH</td>
<td>_____ ACTH</td>
<td>_____ ACTH</td>
</tr>
<tr>
<td>Adrenal cortex</td>
<td>low cortisol</td>
<td>low cortisol</td>
<td>low cortisol</td>
</tr>
</tbody>
</table>

Possible pathological outcomes of *stimulation* test for HPA axis (previous slide).
GENERAL CONCEPTS

• Pathology in endocrinology occurs when there is either too little or too much hormone or resistance to the hormone due to receptor dysfunction.

• Interpretation of hormone levels requires consideration of either the trophic hormone(s) or of the ion/nutrient controlled by the hormone.