I. **Announcements** To make Lab 5 educational, fun & safe for all, please read pp 5-1 thru 5-6 in LM twice before Thursday! Remaining exams & notebooks returned > lecture. Key posted in glass box in Huestis near 120 HUE. Estimate grade? Q?

II. **Blood Chemistry Review** LS ch 11 + 17, DC Module 5, Q?

III. **Endocrinology Overview** LS ch 17, DC Module 13, SI Fox+

A. Vignette: Cushing's syndrome LS fig 17-20 p 521-2
B. Endocrine system DC p 103 fig 13-1, LS fig 17-1, tab 17-1
C. What’s an endocrine? + classes ~ LS pp 495 - 6
D. Hypothalamus (Master) – Pituitary (subcontroller) DC pp 104-6 + LS pp 499-506
E. Posterior pituitary + hormones DC p 108, LS fig 17-4 p 502
F. Anterior pituitary + hormones DC pp 105-7, LS pp 502-6
H. Peripheral endocrine organs DC pp 109-13, LS pp 513-36
   1. Pancreas (insulin – glucagon see-saw!) 2. Thyroid 3. Adrenals...This Thursday more fun & data about me! Heck yeah!!
WOW!  SUPER

~ TOP 5 - 10 ~

EXCELLENT!!

~ TOP 15 ~

GREAT EFFORT

~ TOP 20 - 25 ~
Overall SA + MC
66.5 ± 14.1
X ± SD
⇒ 2/3 Scores ~52-80
I ♥ U of O!

Students who succeed are usually those who:

(1) **Attend** class regularly
(2) **Ask** questions
(3) **Come** to office hours & problem-solving sessions
(4) **Study** outside class both alone & in study groups
(5) **Seek** to understand methods & overarching principles/concepts rather than specific answers
(6) **Teach** or tutor others &
(7) **Discuss** concepts informally with fellow students.

Q? What do I need on the final, if I want to get…?

A? You can actually calculate given assumptions…

e.g., 62 for Exam I & desire ≥ B- (assume ≥ 80)

Assume 100% for lecture (20% of grade) + lab attendance & participation (20% of grade!)

Hope for? Exam I Lecture Lab
X = \[80 - ((0.3 \times 62) + (0.2 \times 100) + (0.2 \times 100))]/0.3

X = \[80 - [(18.6) + (20) + (20)]]/0.3

X = [21.4]/0.3 = 71.3

Need this on Exam II for B- for course!

…Fortunately, the lab buffers the grade!
Today & next time we’ll cover blood chemistry to ensure for adequate lab prep time & incubation.
No food, drink or gum in lab! Thanks sincerely!
1. WASH & DRY

2. ALCOHOL

PREPARATION
SAMPLE + TESTS

1. Obtain μ SAMPLE

2. Blood glucose

3. Blood typing
Glucose: Sugar in Blood

**Normal:** 70-99

**Pre-Diabetes:** 100-125

**Diabetes:** ≥ 126 mg/dL

*NB: Read & Record!*
BLOOD TYPING

ADD ANTISERA

MIX W/TOOTHPICKS

READ & RECORD!!
CLEAN-UP!

1. FOLD DIAPER

2. BLOOD PRODUCTS

3. REWASH!!
All like Type O!

Key:
- N-acetylglucosamine
- Glucose
- Galactose
- Fucose
Cushing’s Syndrome = Hypersecretion of Cortisol: Hypothalamic (CRH), Pituitary (ACTH), or Adrenal (Cortisol)
ANP = Atrial Natriuretic Polypeptide
**Hormone/Endocrine Classifications?**

**Exogenous**

- Amino Acid
- PP
- Protein

**Endogenous**

- Steroid
- Thyroid

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**Thyroid**

- T4: 
  - HO
  - OH
  - CH₂
  - COOH
  - NH₂

- T3: 
  - HO
  - OH
  - CH₂
  - COOH
  - NH₂

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**Steroid**

- Specific Receptor
- Hormonal Receptor Complex
- Protein Synthesis
- Altered Functional Response
Hypothalamus & Pituitary: Intimate Relationship

- Hypothalamus
- Anterior lobe of pituitary
- Posterior lobe of pituitary
- Bone
- Optic chiasm
- Anterior pituitary
- Posterior pituitary
- Connecting stalk
Hypothalamus
< 1% of Brain Mass
Hormone Master Controller
+100s of Functions!

Good Things Come in Small Packages!

Commissure
Lateral Hypothalamic Area
Lateral Preoptic Nucleus
Medial Preoptic Nucleus
Anterior Hypothalamic Area
Supraoptic Nucleus
Optic Chiasm
Dorsomedial Nucleus
Ventromedial Nucleus
Medial Mamillary Nucleus
Lateral Mamillary Nucleus

Kreiger & Hughes 1980
Nervous Connection!!

- Neurosecretory neurons
- Hypothalamic-posterior pituitary stalk
- Anterior pituitary
- Posterior pituitary
- Systemic arterial inflow
- Systemic venous outflow

= Vasopressin
= Oxytocin
Hypothalamus-Anterior Pituitary Vascular Connection!

- Neurosecretory neuron
- Systemic arterial inflow
- Hypothalamic-hypophyseal portal system
- Anterior pituitary
- Posterior pituitary

Vascular Connection!!

- ● = Hypophysiotropic hormones
- ● = Anterior pituitary hormone

LS 2007
Pituitary Nourishing or Growth Hormones

RH + or RIH -

Releasing or Release-Inhibiting Hormones

Systemic arterial inflow

Hypothalamic-hypophyseal portal system

Hypothalamus

Neurosecretory neuron

Systemic venous outflow

• • = Hypophysiotropic hormones

• = Anterior pituitary hormone

Hypophysis = Pituitary
Capillary-Venule-Capillary Intimate Circulation

Krieger & Hughes 1980