

Departmental programs.

JUL 18 1959

Human genetics; mammalian genetics: define staff.

Curriculum { medical  
graduate

Space at Medical Center

" " Pharmacology.

Equipment and Furniture.

New Equipment design.

"Practical systems" of DNA replication.

Use reversible phosphorylation as source of energy? (How  
then regulate primers?)

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⑤: ATP + many phosphates & kinases  
phosphorylate  
block DNA pol c/ RNA? Any inhibitory effect?

Nuclein reagents.

$\text{NH}_2\text{OH}$

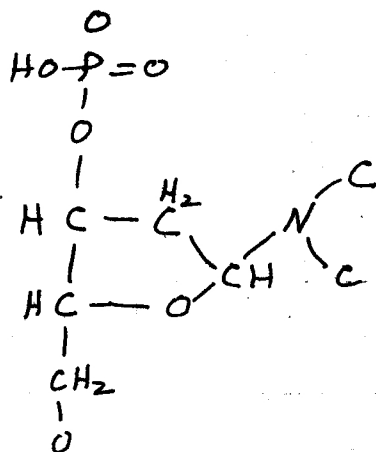
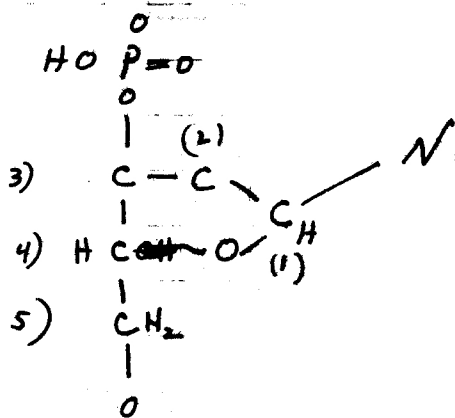
$\text{HNO}_2$

$\text{RNHNH}_2$ .

Stable diazonium.

UNA:

ANA:

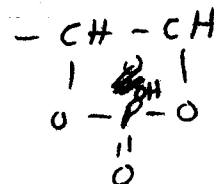
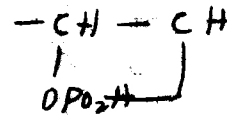
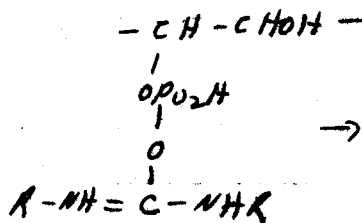
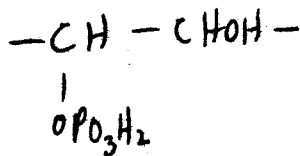
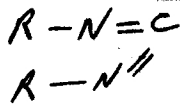


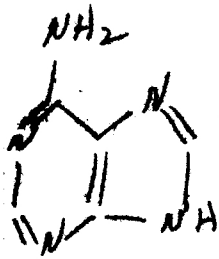
∴ nothing reactive in deoxyribonucleoside.

enzymatic? methyltransferase → thymine  
 mediated by methylcobalamin.  
 any action on nucleosides or nucleotides?

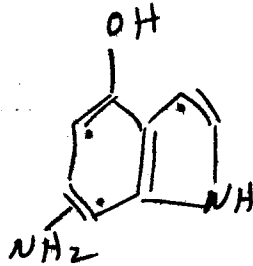
little information on  
 tide-oxidase and  
 deaminases.  
 emits for new organisms?

carbodiimide: Khorana *Chem Rev.* 53, 145 (1953)

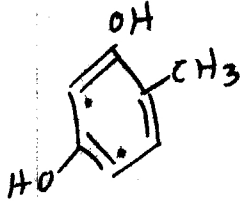




adenine



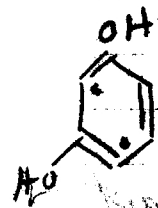
guanine



Thymine



cytosine



uracil

Get stable diazoniums

uracil, cytosine and thymine react with iodine  
also react with diazobenzene sulfonic acid. Parby reagent.

(May also react with phosho; tyrosine?; maitrate nitrogen?)

see Nucleic acids, p. 136 - rev. chemistry simple bases

any keto reactions? Oxime?

cf Woodhouse ~~Arch. Biochem. 25: 347 1950~~  
~~Biochem. J. 44: 185 1949~~

Hunter Biochem. J. 30: 705 1936

Puccio Arch. Biochem. 26: 209 1950

Coding:

Oligopeptide (antibiotic)

peptidases (subtilisin - of Emil Smith)

$$\frac{6 \times 10^{-14}}{3 \times 10^{-14}} =$$

$$\frac{6 \times 10^{-14}}{3 \times 10^{-14}} = 2$$

$$r \lambda = c$$

$$r = \frac{c}{\lambda}$$

$$1 \text{ cm} = 10^4 \mu$$

$$3 \times 10^{10} \text{ cm/sec}$$

Esther's work. General plan:

$$\frac{1}{2}p : \frac{1}{2}p^2 : \lambda^3$$

These behave as alleles.  $p^2$  also contains a ? allele.  
heterozygotes are doubly resistant.

Chemical evolution (stellar condensation): Biogenesis. Planetary life.

Molecular clones: DNA ; polyoma. → ... heterocatalysis;

Genes: Bioassay  $\xrightarrow{dna}$  ; Chemical change: DNA reactants; Role in protein synthesis.

Agging: Is this a cellular process?

NOSSA & HETEROGENEOUS IN VIVO interaction.

Somatic Cell Genetics:

- METHODS.
- CANCER.
- DIFFERENTIATION.
- ANTIBODY ..... HOMOGRAFT. TOLERANCE
- DIAGNOSIS OF GENOTYPE.
- GAMETIC SELECTION.

} are these entirely genetic problems?

Cellular Organization and Function

- CODING - OLIGOPEPTIDES
- CHROMOSOMES ; CROSSING OVER ; CISTRONS
- SEXUALITY MECHANISMS.
- VIRUSES

ORGANISM - The Brain

Development: mitosis!

TROPHINS.

What is a virus - as dna



# Medicine

Chemotherapy: cell-specific cytotoxins

Mental disease - chronic basis. Entero flora genes involved?

Anti Virotics - esp. in re cancer.

Agings - connective tissue diseases { arteriosclerosis  
arthritis

Antibody response mechanism; homogeneplantation.

Biotechnology:

Automicrbiology  
Phosphate nutrition

Neutrophils:

(a) adeptness to salt water.

A. sex

Work outline analysis - miscellany from other notes.  
4/2/59.  
mating

- ① dynamics of mating  
Recognition      Wall lysis      Rejection      Pairing      Disjunction
- ② Crossing over  
recepting; reciprocal?
- ③ Resemblance in *E. coli*; → Salmonella; other intramating yeasts  
Pseudomonas.
- ④ Obligate males?
- ⑤ Mutant F's - of Hirota now. Probability of fusion F.
- ⑥ Lines after recombination; Contacts progeny from single zygotes (can)  
Fate of Hfr.      formation
- ⑦ Behavior of heterozygotes < disjunction & recombination
- ⑧ M/O of UV etc on heterozygotes. Lethal mutation.
- ⑨ Potentiate ♀ness with acetation. Enzyme effects on ♂ and ♀ substances?
- ⑩ Isolation of F and artificial transfer.
- ⑪ Microscope visualization of conjugation.
- ⑫ Dominance of Cat - re Pardee

B. transduction.

1. Use of other methods in Gal<sup>+</sup> system - transduction
2. Crosses involving heterozygotes.
3. Transduction program - gene locus.
4. Polygenetic.

Phase variation : epigenesis.

Characteristics of phases: Stable, linear

Model peptide antigens: ? Fagelkes - stable to lino ?  
(inhibited by amino acids). how many peptides possible ?  
Presumably only distinctive sequences are relevant.

D

DNA transfer.

1. Fragile (broken?) cells after sonication  
\* - done?
2. Protoplasts & osmotic shock
3. High pressure waves

E

Miscellaneous

1. Polarity of bacterial cell. (Castrumbea [pleomorph] organellas).  
Behavioral effects.
2. Centrioles in egg activation; continuity of the centriole.  
Nose disjunction.

# Technical

1. Reaction on films  $\left\{ \begin{array}{l} \text{agar coated} \\ \text{permeable} \end{array} \right.$
2. Separation of genotypes by chromatography  $\pm$  electro
3. Structural changes by inhibition of crossing over: or (a) is inversion  
mathematically impossible, or (b) not interfere with exchange?