

MEDIA

and

SOLUTIONS

IDEAS FOR EXPERIMENTS

UNIVERSITY NOTE BOOK



S-1810-N-80 Lvs.
U. S. A.

name P. S. Sengupta

subject Talks Jashankhali of Fund Res.
Bombay 5.

29/1/79.

① Isolate K-channel mutants resistant or sensitive to 4-aminopyridine by feeding adult flies.

0.5 mM AP has no effect

1.5 mM " causes leg shaking under ether

5 mM " Causes vigorous leg shaking but flies die

(Jan, Jan & Dennis)
Proc. R. Soc. 198, 87.

TEA seems to act only by diffusing into the cut ends of axons.

② Embryotoxin

Rat Diaphragm :-

Effect on spontaneous contractions.

Effect on EP and evoked

EP - quantal content etc.

Effect on Ac. Cholinergic contractile response.

(Seems to have a presynaptic effect)

Experiments concluded.

O.A. 18/2/80

③ T. S. period of chemosensory
infants —

Examine sensitivity of larval
response and adult response

④ ✓ Screening for new olfactory mutants:-

Adult selection :-

Larval selection :-

1. Fractionation using two different cues :-
ie Acetate Vs Alcohol

2. Screening for electrophysiological defects :-

1. Antennogram

2. Single Units.

Specially for 2nd and 3rd chromosome lines.

use Satpatil's method for 2nd and 3rd chromosome

5 ✓ Screening for gust mutants :-

- Try sugar wells.

Screening works well.

Both salt and sugar mutants isolated - (Both chia and fivati).

Screening method for Na-negative (gust-E like mutants) remains to be developed.

(1988 - 1989)

⑥ Conditional behavioral mutants

a) χ -mge. olfactory

b) χ mge phototaxis

Experiment not very successful
Growth at high temps affects

1) Chemotaxis response

2) Phototaxis

⑦ Mosaic analysis of and gus mutants.

- 1) Swati analyzing gus E (1987)

⑧

Mapping of existing
chemotaxis mutants

⑨

[Faint, illegible handwriting]

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⑨ Olfactory physiology

EAG

Single unit responses

Intermediate stations

15/10/88 Direction sensitivity of
the antenna.

- EAG
- Behavioural

(10) Gustatory Physiology:

high-level responses

intermediate stations

(11)

Neuromuscular physiology

Larval

Adult flight muscles

Adult abdominal muscles

12

Axonal conduction

howal

Adult

(13)

Wasp + Spider poisons

(For Wasp Poisons)

Dr. C. S. Lahiri M.B.B.S., Ph.D.

Professor of Pharmacology,
School of Tropical Medicine

Calcutta - 700012

14

Glutamate analogues

15

SDH analysis :-

1. mutations blocked in electrophysiological responses

Salts :-

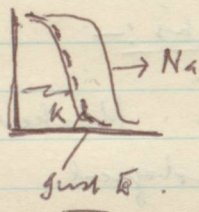
Sugars :-

2. Select SDH clones for antenna.

1990 Project

1. Salt reception

1. Selection of Attraction blocked
(check - over-sensitive to Na).



2. Pyramus blocked: ?

1990

Projects - Continued -

1. ⁺
Na⁺-blocked mutants :-

Select in just R background

lies not-attached by Na⁺
(after X-ray or P-construction
disruption) (See a screening
protocol)

Separate Li-spike blocked
strains -

just R revertants :-

(Can be screened for just E
directly)

2. Select K⁺ blocked (Repulsion - block)
Mutants.

3. just E alleles :- (See later)

Select by excision :- P-insert -

3. Genetics of $olfC$

1. Excision from neighbouring insertions

2. Deletions in $olfC$:-
(Champe & Burnash),

3. $olfC$ - mutants. (using strong)
double mutant ($olfC^{x1a}$).

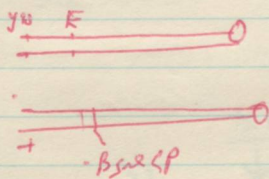
- Triab method

- Multiple - γ - maze.

4. P. induce $olfC$..

4. Mosaic analysis of gut E being
using (β -gal insert) as cell marker

i) by mitotic crossing-over



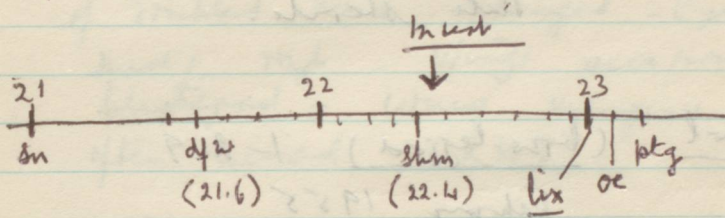
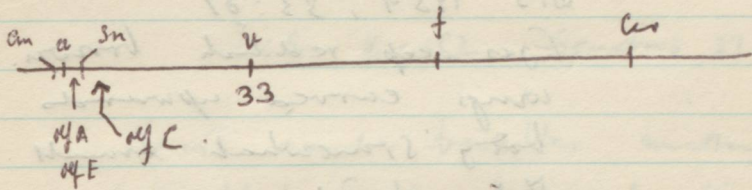
X-ray -

Select yellow-hair patches on proboscis

Test. Phylogeny.

β -gal staining pattern.

refractory patches: (Genes) near of Sm (21-23)



Sm: TDI - (21).

d/w: wing upheld & spread - ♀♀ sterile (21.6)

shu: short macros (bristles short) ♂ sterile (22.4)

spx: split thorax (22.6).

lix: - little ixanthopleura.

*
rdb (reddish brown) 1-21.7
Fahmy 1956 (RK 3)
DIS 1959, 33:89
Eyes deep reddish brown.
wings curved upwards
body somewhat small
Male sterile.

bwd (bwo-legged) 1-21.9
Fahmy 1955 (RK 3)
DIS 33:83
Poorly viable short divergent
wing - legs shortened
and bow-shaped -
Male sterile - RK 3.

Sex : (scruff). 1-22.0

Neal 1942

DIS 16:52 , Genches 27:532

Hairs and bristles missing
of doubled and deranged - Eyes
small + rough - Wings occasionally
blistered - wing margins
often missed (RK3)

just E :- penes near just E

(18-19)

6E 1-5 (1/2 to 5/8)

shyted 1-17.9

Vein L3 shyted

RK2 - ♀ sterile

* depressed 1:18

Wing turned
down, RK2

* Eye (eyelid) 1:18

One or both
eyes reduced

(slight to)
absent

often antenna
duplicated

(incomplete)
penetrance

* Int (Int) 1:18

Wings droop
bristles thin,

fly small

♂ - sterile

em (Carmine) 1-18.9

just BCD

(10E₁₋₂)

In just BC

(10E₁₋₂)

just BCD

(10E₁₋₂)

just BCD

(10E₁₋₂)

just BCD

(10E₁₋₂)

just BCD

just BCD

just BCD

just BCD

just BCD

just BCD

(10E₁₋₂)

(10E₁₋₂)

Experiment : Screening of Na^+ blocked mutations on X chromosome

Strains required

1. $\hat{X}X$ $\text{gus}^+ R^x / \text{gus}^+ R^x$

2. P-insert lines (mag^+) on the X chromosome.

Cross :

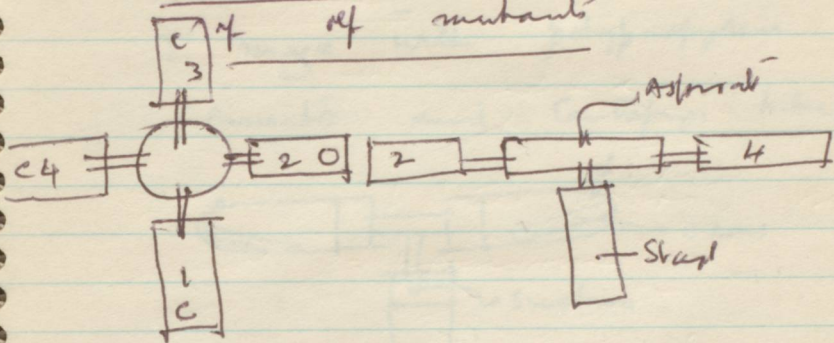
$\text{gus}^- \xrightarrow{\text{P}}$ $\hat{X}X$, $\text{gus}^+ / \text{gus}^+ R^x$

Test in groups of 10
on ~~red~~ ^{White} + NaCl.

Multiple choice

usage for enrichment

of mutants



Start with 200 phis

Substrate above arm collects 150 phis. (at suitable attractant arm)

let starting frequency be x .

There will be $\frac{x}{4}$ mutants in

O. and $\frac{3x}{4}$ in C arms

$$\text{Enrichment} = \left(\frac{3x}{4} / 150 \right) \div \left(\frac{x}{4} / 200 \right)$$

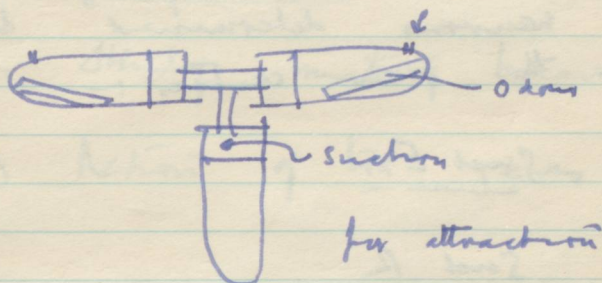
$$\frac{3x}{4} / 150 \div \frac{x}{4} / 200$$

$$= 3 \text{ fold / cycle}$$

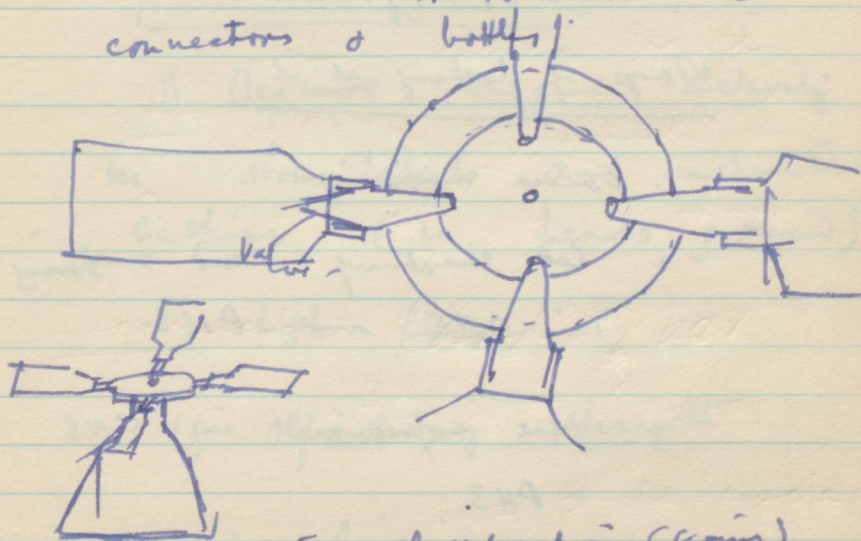
1991

Make Improved maze

T maze with polypropylene
connectors and centrifuge tubes:



Make with polypropylene tubing
connectors & bottles:



For classification (scoring)
and selective screening.

199)

Gustatory mutants

↳ the identity of gustatory neurons determined by the brain centres :-

Sust E

Sust R

and other isolates with increased or reduced firing.

Ways of looking at it

1. Focus mapping
2. Cell mapping and mapping in CNS and PNS.
3. gene expression in CNS + PNS.

P. - insects

Sex-specific traits

- 1) Study mating behaviours
- 2) Action of tra genes.

Activity-dependent expression of neural genes

- 1) Measure enzyme activity in stimulated and unstimulated cultures (in heads grown)
 - a) high plasmin
 - b) olfactory stimuli
- 3) Rich and poor media for growth,

Mutations affecting
olfactory receptor

Examine attraction and
reposts of lg in images

lg - grows late :- Can

one use this to search for

late growing neuronal mutants?

EAG

Examine development of
EAG after emergence
(also taste firing)

Do all chemical sensitivities
develop in parallel?

What happens in different
environments?

Rich Vs - synthetic media

Media with different odors

1995

dfc (β -integrin)

1. To test if integrin affects
dfaction:-

Select mutants which are strong dominant - negative suppressors of EA response

Note :- Dimerization will be affected in homodimers but heterodimeric integrins may survive.

Experiment :

Test - lethal excision lines + EA⁻ excision lines again dfc 14 and dfc 17

(Think of other screens with Champ's P-insert)

2) ts-mys mutants (ts3 is a tight allele)

Examine if high temperature affects the olfactory responses of flies grown at permissive temperature.

1. EAG.

2. Olfactory behaviour.

6) Rana,

I. I. T. Delhi

1988

1. Gurish R. Gupta - IIT. Phys-Engineering
(wants to work in summer
vacations).
2. Arshad Kudroli ; IIT. Engineering
Physics - Worked for 4 weeks
with Swati.
3. Shabani Basak
Inst of Sci. Bombay
(will work during summer)
end of May
4. Dr Sajed Hussain
Maulana Azad Medical College
(will come in June for)
two months
5. Jyoti Rengarajan ; (COBRA)
% Rengarajan
1st week of May

Students at A.I.P.S.

(Met at J.N.U. Meeting).

1. Sujit Kumar Sikdar

Dept of Physiology

A.I.M.S.

2. Biren Folekar

Dept of Biochemistry

A.I.M.S.

3. Abdul Hamid Bana.

Dept of Biochemistry

A.I.M.S.

1988-

Vikram Dwivedi,

(did not come).

Other addresses:

1. Syed Mohammed Zaidi

82. Ibrahimtola Road,

Bombay 3.

Tel. 33 5682.

(came in connection with)
his 50th Anniversary exhibition

2.

~~Mrs. Rita Dey,
Cancer Res. Institute
(Post Doc. Fellowship)
?~~

PK Malkani
Camera Service Center
Opp. Strand Cinema
Colaba.
Tel. 215603

Students (Prospective) -
Candidates

Satyajit Rath
Anuradha Swami
Vanita Dal.

(Medical students from)

Poona - B. J. Med.
College.

M. K. Jayakar

90 Dr. K. S. Jayakar
27, H. Kerve Rd.
Bombay 4.

Mrs. Alka Mehta

Tel. 2/6945 → Sunil Bhatia's
Sister in Law.

Dr. Subrota Tripathi.

(Paritals son in Law).

Physiology Dept.

Patel Chest. Res. Inst.

(Nivedita). Nā .

Dr - N. K. Shah ;

Phone . Harp . 355751

Home 386583 .

For Amberstone

New Jobs

1. Descriptive Dishes:

2. Electrode holders.

Old Jobs

Amkashan

1. Cartis ;
1 year .

2. Rockers ;
3 year (1976)

3. Electronics Puller
1 year . (since 1978)

