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United States Army
BIOLOGICAL LABORATORIES
Fort Detrick, Frederick, Maryland 21701

SMUFD-BR-C

9 March 1965

Professor Joshua Lederberg
Department of Genetics
School of Medicine
Stanford University
Palo Alto, California

Dear Professor Lederberg:

Thank you for your prompt air mail reply of March 5th with additional cryptology relating to polyhedra. I cannot imagine a more perfect inspiration than Dr. Polya for polyhedral partitioning analysis, and you can see from the enclosures that I am exploring a much simpler lower level.

Blair and Henze calculated the alkane (free-tree) isomers with alkyl (rooted-tree) answers, whereas in 1955 I saw a way of counting them directly-- from "established" partition-counting tables. Unfortunately, I could not find supporting references--even from The Unpublished Mathematical Tables Center at University of California--showing that mathematicians has "established" these counts for different kinds of partitioning places. No doubt the situation has improved in the past ten years, as this is really elementary arithmetic.

When I was almost ready to compose a MS fit for publication, I found a general solution to Arthur Cayley's problem, wherein the alternatives are not the binomial Y or X alternatives, but branching points of unlimited valence. Then I felt that the "more queer" cyclic partitions also should be put into the full story, so I just never found time to compile this whole ramified file.

The "43 fundamental types of tricyclic structures" were presented to the NBS Airlie House Workshop of September 1953 in a 2-page ditto-printed note. As soon as I find one of my few remaining copies, I will duplicate it for you. Meanwhile, I hope you will accept the attached sketch of these 43 forms and other enclosures as a "first round" of exchanges.

Regarding this other enchanting intellectual exercise with aminoacids, there may be several reasons why Sorm's single-letter proposals have not been accepted:

(1) At first glance there seems to be no justification whatever for assigning the letter-I to anything other than isoleucine.

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(2) Likewise it seems illogical not to use L for either Leucine or Lysine, the prime candidates for this letter.

(3) The key choices do not seem statistically justified.

(4) No alternatives are offered for unresolved asparaginoid and glutaminoid pairs, at least not on the list you gave me.

(5) No provision is evident for a cystine/2 difference from cysteine.

(6) No provision is evident for the terminal OH- or NH₂-groups.

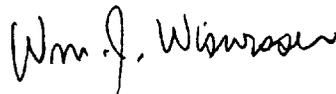
(7) No provision is evident for a general uncertainty.

Half a year has passed since my suggestions of August 17, 1964 were given flattering attention in C&EN (without knowing about Sorm's work), yet your note of March 5th is the first substantial one that I have received on it. Thus general apathy prevails, and I am willing to join forces with you to fight this deadly disease of indifference.

My attack on this intellectual 20-step puzzle started with the recent knowledge about the statistical prominence of alanine, glycine, and lysine, justifying these three key assignments for A, G, and L. Next, my choices for the asBaragine/aspartic acid and glutamine/glutamic acid unresolved pairs have some mnemonic excuse--J for the asparaJinic B/D pair and W for the "double-U" glUtamic N/U pair.

Finally, terminal letters are needed for the aqueous OH-end and the "aZotic or hydraZinoid" NH₂-end (Z is pictorially a letter N "on end"). I would accept Sorm's C for cysteine if K were reserved for the related "Konnecting" cystine/2, since K is in fact a branched symbol. We agree perfectly on F, H, M, P, S, and V, so I cannot see why we could not reach full agreement after some give-and-take in an open forum bout. Thus I expect that no one would take exception to X for unknowns!

Sincerely,



WILLIAM J. WISWESSER
Research Chemist
Crops Division

Encls-

Structure-counting MS
Partitioned Counts to C₂₀
Ring Types: '58 & '63
Amino acid Letters
Empty Column

ik cc: Dr. Harold Batchelor 2
Wm. H. Longenecker
Aaron Addelston