Proposal for a Uniform Nomenclature for Simian Virus 40 Mutants

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A uniform nomenclature for simian virus 40 mutants has been developed. This nomenclature should evolve into a comprehensive nomenclature as new mutants and information are obtained. Hopefully, this nomenclature will also stimulate the development of a comprehensive nomenclature for all animal virus mutants.

In 1966, Demerec et al. (1) published "A Proposal for a Uniform Nomenclature in Bacterial Genetics." This proposal was the outcome of eight years of work with an evolving nomenclature system for bacterial mutants. The aims of the proposal were: "uniformity; a unique designation for each strain; convenience for typing, editing, printing, record-keeping, and information retrieval; adaptability, simplicity, clarity, and comprehension by workers in all areas of biology; and adaptability to new developments in the foreseeable future."

We have recently published (2, 3, 4, 6, 7) or will soon publish (Robb and Martin, Robb et al., *submitted for publication*) studies dealing with mutants of simian virus 40 (SV40). It is clear that the nomenclature we have chosen is confusing and will not improve with further publications. We had the opportunity to meet at the recent Tumor Virus Meeting at Cold Spring Harbor, N.Y. (16-19 August 1971) and have tentatively adopted the nomenclature shown in Fig. 1 for all types of SV40 mutants except hybrid mutants such as adeno-SV40 hybrids. We have tried to conform our nomenclature to that used in bacterial genetics as much as possible so that it is "simple and manageable" and "avoids the use of unnecessary commas, semicolons, colons, superscripts, subscripts, or Greek letters."

We feel as Demerec et al. (1) felt: "This proposal does not intend to present a rigid, 'official' frozen system of nomenclature. The system is bound to evolve as knowledge advances in the future. The proposal takes the form of a set of guiding principles for dealing with categories where usage can be clearly defined; application to specific situations is left to each individual worker." The present communication is aimed at

making widely available the proposal as developed to date. Comments, suggestions, and additions are welcome.

General rules

1. The entire name should be in italics or underlined (*see no. 7*).
2. All letters should be lower case, except the complementation group.
3. The designation for mutant type should be the prominent characteristic of the mutant. For example, a mutant could be temperature-sensitive and host range (e. g., Takemoto, SV-L, reference 5). A choice should be made as to the most prominent characteristic and designate it in the following manner: *ts(hr)* where temperature sensitivity is the primary characteristic and host range is the secondary characteristic.
4. At the present time, the determination of complementation groups can be accomplished through the exchange of mutants. If complementation studies have not been performed, a hyphen (-) should be used in the complementation group space. If the mutant does not complement, an asterisk (*) should be used in the complementation group space. As data become available as to which gene each mutation is in, the complementation group designation will be modified to indicate the actual gene.
5. The mutant number should be Arabic numerals and each number should be used only once (i. e., each mutant should have a unique number).
6. The following information should be in Material and Methods in EACH publication:
(a) The origin of the wild-type virus stock from which the mutant was obtained: (b) a full, but

Example for Naming Mutant

Mutant Type
|
Complementation Group

|
Mutant Number

tsA7
tsB8
*ts*101*
pm-301

[Tegtmeyer (7), formerly NTG-7]
[Tegtmeyer (7), formerly NTG-8]
[Robb & Martin (*submitted for publication*)]
[Kit (3), formerly mKS-U4]

Mutant Type

hr host range
pm plaque morphology
ts temperature-sensitive

Complementation Group

A *tsA7* [Tegtmeyer (7)]

B *tsB1*, *tsB8*, *tsB11* [Tegtmeyer (7)]

C, D, E, etc. Unassigned

(*) Mutant does not complement [e.g., *ts*101*, Robb & Martin (*reference 4 and submitted for publication*)]

(-) Complementation tests not done [e.g., *pm-304*, Kit (3)]

Mutant Numbers

0-99 Tegtmeyer
100-199 Robb
200-299 Martin
300-399 Kit
400-499 Janet S. Butel, Department of Virology, Baylor College of Medicine, Houston, Tex. 77025
500-599 K. Yoshiike, S. Uchida, and A. Ishikawa, National Institute of Health, Tokyo, Japan

FIG. 1. Tentative nomenclature for all types of simian virus 40 mutants except hybrid mutants such as adeno-SV40 hybrids.

brief, description of the origin and phenotype of each mutant; (c) the cells and culture conditions (including media) used for growing and plaquing the mutant and wild-type stocks; and (d) the plaque morphology of each mutant.

7. Once the mutant name and description have been given in Materials and Methods, only the mutant number need be used with italics in the text, unless the complementation group is also necessary for clarity. The wild-type virus can be designated as wild type or WT in the text.

8. Blocks of mutant numbers can be obtained from J. Robb. It would be appreciated if a brief description of the mutant isolation procedure and characterization of the mutant(s), including cells and culture conditions, would be submitted with the request for mutant numbers.

LITERATURE CITED

- Demerec, M., E. A. Adelberg, A. J. Clark, and P. E. Hartman. 1966. A proposal for a uniform nomenclature in bacterial genetics. *Genetics* 54:61-76.
- Dubbs, D. R., and S. Kit. 1970. Isolation of double lysogens from 3T3 cells transformed by plaque morphology mutants of SV40. *Proc. Nat. Acad. Sci. U.S.A.* 65:536-543.
- Kit, S., S. Tckuno, K. Nakajima, D. Trukula, and D. R. Dubbs. 1970. Temperature-sensitive simian virus 40 mutant defective in a late function. *J. Virol.* 6:286-294.
- Robb, J. A., and R. G. Martin. 1970. Genetic analysis of simian virus 40. I. Description of microtitration and replicating techniques for virus. *Virology* 41:751-760.
- Takemoto, K. K., R. L. Kirschstein, and K. Habel. 1966. Mutants of simian virus 40, differing in plaque size, oncogenicity, and heat sensitivity. *J. Bacteriol.* 92:990-994.
- Tegtmeyer, P., C. Dohan, Jr., and C. Reznikoff. 1970. Inactivating and mutagenic effects of nitrosoguanidine on simian virus 40. *Proc. Nat. Acad. Sci. U.S.A.* 66:745-752.
- Tegtmeyer, P., and H. Ozer. 1971. Temperature-sensitive mutants of SV40: infection of permissive cells. *J. Virol.* 8:517-524.