Plasmodium berghei

Life-histories and stabilates (deep-frozen samples) of isolates, lines and clones maintained at the University of Edinburgh

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Plasmodium berghei: origins of isolates
**Isolates, lines and clones**

An **isolate** is a sample of parasites collected from a wild-caught animal on a unique occasion. An isolate may contain more than species of parasite, and more than one genetically distinct clone of a given species.

A **line** refers to parasites which have undergone a particular passage or treatment. Parasites in a line usually have certain characteristics in common, but are not necessarily genetically identical.

A **clone** is an infection derived in the laboratory from a single haploid parasite, usually an asexual blood form, or sometimes a sporozoite.

**Mixed species infections**

Note that the majority of wild-caught rodents have been found to contain mixed infections of more than one species. It must be assumed, therefore, that uncloned isolates may contain such mixtures, even after prolonged passage through laboratory animals.

Also, note that *Plasmodium chabaudi* and *P. vinckei* do not normally infect intact laboratory rats (although they can be adapted to this host by passage through splenectomised rats). Uncloned isolates which have been passaged through laboratory rats, therefore, can be assumed to contain only *P. yoelii* or *P. berghei*. 
**P. berghei isolates and clones**

<table>
<thead>
<tr>
<th>Isolates</th>
<th>Clones</th>
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</thead>
<tbody>
<tr>
<td>ANKA</td>
<td>ANKA1, ANKA5</td>
</tr>
<tr>
<td>K173 (N)</td>
<td>RC</td>
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<td>KSP11</td>
<td>RLL</td>
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<tr>
<td>LUKA</td>
<td></td>
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<td>NK65</td>
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<td>SP11</td>
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</table>

**Important note:** There is strong evidence that all these parasites, except RC and RLL, are genetically identical, since they have identical sequences for their *ama1*, *msp1* and *dhfr* genes.

**P. berghei** (Democratic Republic of Congo)

**Isolate ANKA**

Isolated from *Anopheles dureni millecampsi*,
caught in forest gallery, River Kasapa, near Lubumbashi, by Vincke and Bafort, 07.03.65

Ampoules 1571, 1572 obtained from London SHTM.

\[\text{Mice 1L}\]

\[\begin{array}{c}
\text{Stabilate 23} \\
05.11.68 \\
\downarrow \\
\text{Mice 61L} \\
\downarrow \\
\text{Mice 62L} \\
\downarrow \\
\text{Cloning} \\
\downarrow \\
\text{Mice 64L} \\
\downarrow \\
\end{array} \quad \begin{array}{c}
\text{Stabilate 25} \\
06.11.68 \\
\downarrow \\
\text{Mice 65L} \\
\downarrow \\
\text{Mice 66L} \\
\downarrow \\
\end{array}\]

5 clones deep-frozen, sent to Antwerp (M. Wèry)

\[\text{Clones sent back to Edinburgh from Antwerp}\]

\[\begin{array}{c}
\text{Clone 1} \\
\downarrow \\
\text{Mice 70L} \\
\downarrow \\
\text{Stabilate 910} \\
16.05.78 \\
\downarrow \\
35\text{ mouse passages} \\
\downarrow \\
\text{Mice 149L} \\
\downarrow \\
\text{Stabilate 1369} \\
05.11.82 \\
\end{array} \quad \begin{array}{c}
\text{Clone 5} \\
\downarrow \\
\text{Mice 74L} \\
\downarrow \\
\text{Stabilate 914} \\
16.05.78 \\
\downarrow \\
\end{array}\]
**P. berghei (Democratic Republic of Congo)**

**Isolate K173 (origin of N strain)**

Isolated from *Grammomys surdaster* caught in forest gallery River Kisanga, near Lubumbashi by Vincke and Lips (1948).

(i) **K173** - mice obtained from Dr Clara Frontali, Rome, arrived 02.08.83

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Stabilate 1388
13.08.83
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(ii) **N strain** (original 'Mill Hill' strain), taken from Mill Hill to Liverpool by D. Warhurst. Progenitor of chloroquine-resistant RC strain

Mice received from W. Peters, Liverpool, 03.10.73, numbered 1DQ

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Stabilate 429
04.10.73
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**P. berghei** (Democratic Republic of Congo)

**RC strain**

Derived from 'N' strain by chloroquine selection
  See isolate K173 for details of original isolate.

Mice sent by W. Peters from Liverpool, 20.10.70, numbered 1RC

\[
\begin{align*}
&\text{Mice 2RC} \\
&\text{Stabilate 149} \\
&\text{05.11.70} \\
&\text{11 mouse passages} \\
&\text{Mice 22RC} \\
&\text{Stabilate 197} \\
&\text{11.06.71}
\end{align*}
\]
**P. berghei** (Democratic Republic of Congo)

**Isolate KSP11**

Isolated from *Anopheles dureni millecampsi*, caught in Katanga, 04.11.61. Received in New York University 17.11.61


Mice sent by Dr Rosa Vasquez, NIMR, Mill Hill, 20.02.78.
Line SPB6
Mice 1EO

↓

Stabilate 874
24.02.78

Line PB19
Mice 2EO

↓

Stabilate 875
24.02.78
**P. berghei (Democratic Republic of Congo)**

**Isolate LUKA**

Isolated from *Anopheles dureni millecampsi*,
caught in forest gallery, River Kasapa, near Lubumbashi, by Vincke and Bafort, 15.03.66

Mouse no. 6739 sent by Dr J. Bafort, Liverpool, 02.10.71

![Stabilate 201](05.10.71)
**P. berghei** (Democratic Republic of Congo)

**Isolate NK65**

Isolated from *Anopheles dureni millecampsi*, caught in forest gallery, River Kisanga, near Lubumbashi, January, 1964, taken to New York, 04.01.64, used to infect *G. surdaster*. Then passaged through *A. quadrimaculatus* and hamsters.


Mice infected with NK65 obtained from Liverpool, arrived 15.10.68.

Numbered 1K

- A. stephensi
  - Mice 4K
    - Stabilate 22
      - 05.11.68
      - 2 mouse, 5 *G. surdaster*, 2 A. stephensi passages
    - G. surdaster 111K
      - Stabilate 193
        - 282.05.71
        - Mice 202K
          - Stabilate 819
            - 04.10.77
            - Mice 224K
              - Stabilate 1252
                - 13.08.80
      - 3 mouse, 1 A. stephensi passages
      - G. surdaster 164K
        - Stabilate 293
          - 24.03.72
          - Mice 581K
            - Stabilate 293
              - 19.03.05
**P. berghei** (Democratic Republic of Congo)

**Isolate SP11**

Isolated from *Anopheles dureni millecampsi*,
caught in forest gallery, River Kasapa, near Lubumbashi, February, 1961
Progenitor of pyrimethamine-resistant line RLL

Ampoules obtained from R. Killick-Kendrick, Imperial College, 25.10.71.

\[ \text{Mice 2DH} \]

\[ \text{Stabilate 226} \]

03.11.71
P. berghei (Democratic Republic of Congo)

Line RLL

Pyrimethamine-resistant line of isolate SP11
See SP11 for isolation details

Ampoules (1575, 1576) frozen since 06.09.68 obtained from London School of Hygiene and Tropical Medicine.

↓

Mice 1M

↓

Stabilates 26, 27
07.11.68
References

These references represent a small selection of papers, books, etc. concerning some of the *P. berghei* isolates, lines and clones included in this file.

1. Overall summaries:


2. Original isolation of strain K173


3. Other isolations


