Table 1 Nest size, length and weight of queen

<table>
<thead>
<tr>
<th></th>
<th>Normal nest</th>
<th>Nest with polygamy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nest volume (cm³)</td>
<td>6405.9 ± 825.3</td>
<td>6292</td>
</tr>
<tr>
<td>Nest weight (kg)</td>
<td>3.07 ± 0.28</td>
<td>3.315</td>
</tr>
<tr>
<td>Diameter of royal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>chamber (cm)</td>
<td>4.42 ± 0.05</td>
<td>4.5</td>
</tr>
<tr>
<td>Weight of queen (mg)</td>
<td>111.5 ± 62.35</td>
<td>24.6 ± 10.66</td>
</tr>
<tr>
<td>Length of queen (cm)</td>
<td>2.1 ± 0.04</td>
<td>0.9 ± 0.04</td>
</tr>
</tbody>
</table>

More than one pair of reproductives in certain species of termites have been reported as unusual cases. This phenomenon was unknown in the present termite, *M. championi* and this seems to be the first record of polygamy in this species.

The authors thank Dr J. S. Singh, for his helpful advice and to the Department of Science and Technology, New Delhi for financial assistance.

14 March 1983; Revised 4 May 1984


PRODUCTION OF MOSQUITO GENE BANK

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The concept and the development of recombinant DNA technology has made it possible to introduce segments of prokaryotic or eukaryotic genes into bacteria, yeast and cultured mammalian cells. Gene banks have been constructed using the shot-gun approach. Eukaryotic systems for which gene banks have been constructed include among others the yeast chromosomes, *Drosophila* embryo DNA, goose europygial gland DNA, random sequences from normal chicken DNA, human X chromoso-
from the cleared lysate obtained by lysozyme (2 mg/ml), EDTA, (150 mM) and Triton X-100 (0.1%) treatment extracted by phenol chloroform\textsuperscript{25} and ethanol precipitated. Greater than 80\% of the DNA was in the supercoiled form and was directly digested with Bam H1. Cleaved plasmid DNA was treated with bacterial alkaline phosphatase (in Tris-HCl pH 8.0, 100 mM) to remove the 5' phosphate of the linearised DNA to prevent self ligation.

The Bam H1 fragments of \textit{A. stephensi} DNA were mixed with the linear pBR 322 molecules in a ratio of 1:100 and allowed to anneal (in Tris-HCl buffer pH 7.4, 10 mM, KCl 30 mM, MgCl\textsubscript{2} 30 mM and EDTA 0.5 mM). Circularised chimeric plasmids were ligated with 4 units of \textit{T}_{4} DNA ligase (in Tris-HCl pH 7.4, 40 mM, KCl 30 mM, MgCl\textsubscript{2} 30 mM, ATP 1 mM, BSA 1 mg/ml, spermidine 1 mM and DTT 10 mM).

\textit{E. Coli} strain HB101 cells made competent by calcium chloride treatment\textsuperscript{26} were transformed with the chimeric plasmid DNA (ratio of $10^{8}$ : 1) so that no more than one plasmid transformed a single bacterium. The transformants were selected on Luria agar plates containing ampicillin (100 \mu g/ml). Replica-plated transformants were again selected on ampicillin (100 \mu g/ml) and tetracycline (10 \mu g/ml) as well as ampicillin (100 \mu g/ml) alone. Colonies capable of growing only in the presence of ampicillin alone were selected as those having the chimeric plasmid with the

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{image1.png}
\caption{0.8\% neutral agarose gel showing the electrophoretic pattern of \textit{Anopheles stephensi} salivary gland DNA. Track 1 is of \lambda DNA digested with Hind III, Track 2 is of \textit{A. stephensi} DNA digested with Bam H1 before treatment with CTAB, Track 3 is of \textit{A. stephensi} DNA digested with Bam H1 after CTAB treatment and Track 4 is of \textit{A. stephensi} DNA before restriction digestion.}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{image2.png}
\caption{Screening of colonies based on antibiotic resistance. Left: Luria agar plate supplemented with ampicillin (100 \mu g/ml). Right: Luria agar plate supplemented with ampicillin (100 \mu g/ml) and tetracycline (10 \mu g/ml).}
\end{figure}
mosquito DNA fragment (figure 2). The transformation frequency of *E. coli* HB101 cells with the chimeric plasmid was about 60% lower than that with pBR 322 (table 1).

Selected colonies (Amp\(^{+}\)/Tet\(^{-}\)) were further tested for the presence of the *A. stephensi* DNA by colony hybridization\(^{27}\) with \(\alpha^{32}\)P labelled nick translated\(^{28}\) (in Tris-HCl pH 7.5, 50 mM, MgCl\(_2\) 25 mM, DTT 10 mM, BSA 500 µg/ml and the four cold dNTP's 2 mM each in addition to \(\alpha^{32}\)P labelled dCTP and \(10^{-3}\) mg/ml of DNase I and 4 units of DNA polymerase I) DNA Colonies were first hybridized with denatured salmon sperm DNA and then with nick translated *A. stephensi* salivary gland DNA and then autoradiographed. Figure 3 shows that the colonies are lighted up. Plasmid DNA was isolated from these colonies and electrophoresed on 0.4% neutral agarose gel. As seen in figure 4, the chimeric plasmid DNA showed lower electrophoretic mobility than pBR 322 DNA. Some of these were found to contain as big as 10\(^7\) dalton segments.

We wanted to recover mosquito DNA fragment inserted into pBR 322 by digesting the chimeric plasmid with Bam H1. Surprisingly, instead of the expected two fragments (one corresponding to the linear pBR 322 DNA and the other to the mosquito DNA

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**Table 1** Transformation frequency

<table>
<thead>
<tr>
<th>Organisation used for transformation</th>
<th>DNA</th>
<th>Number of colonies per ml of transformed culture medium</th>
<th>Transformation frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>E. coli</em> HB101</td>
<td>pBR322</td>
<td>1.25 \times 10^6</td>
<td>6.08%</td>
</tr>
<tr>
<td><em>E. coli</em> HB101</td>
<td>pBR322</td>
<td>7.50 \times 10^7</td>
<td>2.50%</td>
</tr>
<tr>
<td></td>
<td>+</td>
<td>Mosquito DNA</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Luria agar</td>
<td>8.5 \times 10^6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Luria agar antibiotics(^*)</td>
<td>1.9 \times 10^6</td>
</tr>
</tbody>
</table>

\(^*\) Tetracycline (10 µg/ml) and ampicillin (100 µg/ml) were used when pBR 322 DNA was used for transformation and only ampicillin (100 µg/ml) was used when pBR322 + mosquito DNA was used for transformation.

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Figure 3. Colony hybridization using \(\alpha^{32}\)P-dCTP nick translated *A. stephensi* salivary gland DNA as the probe.

Figure 4. 0.4% neutral agarose gel showing reduced electrophoretic mobility of the chimeric plasmids with the mosquito DNA inserts (tracks 1, 2, 4, 5, 7 and 8) as compared to that of the plasmid pBR322 (track 10). Tracks 3 and 6 are \(\lambda\) DNA and its digest with Hind III respectively, Track 9 contains linear oligomers of \(\lambda\) dv 21 DNA. (Boehringer Manheim).
Figure 5. Electrophoretic pattern of restriction endonuclease digests of chimeric plasmids on a 1.2% neutral agarose gel. Tracks 1, 2 and 4 are of DNA from clone No. 2 digested with Hinc II, Bcl I and Bam H1 respectively, track 3 is of uncleaved DNA from clone No. 2, tracks 10, 11 and 13 are of DNA from clone No. 4 digested with Bam H1, Hinc II and Bcl I respectively, track 12 is of uncleaved DNA from clone No. 4, tracks 5 and 6 are of uncleaved pBR322 DNA, tracks 8 and 9 are of pBR322 DNA digested with Bam H1 and Hinc II respectively and track 7 is the Hind III digest of λ DNA.

Dr. A. Therwath, Faculte de Medicine Lariboisiere, Saint Louis, Paris was a visiting scientist during the period of this work. We are grateful to Dr. D. N. Deobagkar for his critical guidance and help.

16 April 1984


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**ANNOUNCEMENTS**

**INDIAN SOCIETY OF DEVELOPMENTAL BIOLOGISTS—YOUNG SCIENTIST AWARD**

The Indian Society of Developmental Biologists invites nominations from institutions/individuals for the Swami Pravanand Award for Young Scientist in Developmental Biology. The award carries a sum of Rs. 3,000/- and a citation. The awardee must be below 32 years of age as on 1 January 1984, and should have made outstanding contribution in the field of Developmental Biology. The awardee will be requested to deliver an oration during the next symposium by the Society.

Nominations should be sent along with five typed copies of a statement of the contributions made by the scientist and should reach Dr Suresh C. Goel, Secretary, Indian Society of Developmental Biology, Department of Zoology, University of Poona 411 007 on or before 15 October 1984.

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**SPRING COLLEGE ON RADIATION IN PLASMAS, MIRAMARE, TRIESTE, ITALY**

The International Centre for Theoretical Physics will hold a College on Plasma Physics from 27 May to 21 June 1985. It will be organized and directed by the ICTP Plasma College Committee and the ICTP Advisory Group on Plasma Physics.

While the main theme for the College is “Charged Particle Transport in Plasmas” there will be three separate sessions on the following topics: “Space Plasma Physics” (27 May–4 June) including a mini-symposium on ‘Results from the 1985 International Comet missions’; “Laser/Beam-Plasma Interactions” (4–12 June) including a mini symposium on ‘Recent advances in Particle/Plasma acceleration’; “Magnetically Confined Plasmas” (12–21 June) including two mini-symposia on 1. “Recent results from large Tokamaks, JET, TFTR, JT-60, T-10”;

2. “Applications of new advances in non-linear dynamics to plasma physics”.

In addition to the above programme, on 4 and 5 June there will be a ‘Special session on Science and Development’. The College will also include workshops on several different topics.

The College is open to scientists from all countries that are members of the United Nations, IAEA or UNESCO. Participants should preferably have completed several years of study and research after a first degree. English will be the working language. The last date for requesting participation is 15 November 1984.

Further particulars may be had from: International Centre for Theoretical Physics, College on Radiation in Plasmas, P.O. Box 586, I-34100 Trieste, Italy.