

Aug 22, 2025

Version 2

BEAD INJECTION PROTOCOL V.2

DOI

<https://dx.doi.org/10.17504/protocols.io.5jyl88j46l2w/v2>

Yuanzhuo Zhou^{1,2}, Kohei Asai^{1,2}, Hirohisa Kyogoku^{1,3}, Tomoya S. Kitajima^{1,2}

¹Lab for Chromosome Segregation, RIKEN Center for Biosystems Dynamics Research (BDR), Kobe, Japan;

²Graduate School of Biostudies, Kyoto University, Kyoto, Japan;

³Graduate School of Agricultural Science, Kobe University, Kobe, Japan

Designing protein-base...



Yuanzhuo Zhou

Laboratory for Chromosome Segregation, RIKEN Center for Bios...

Create & collaborate more with a free account

Edit and publish protocols, collaborate in communities, share insights through comments, and track progress with run records.

Create free account

OPEN  ACCESS



DOI: <https://dx.doi.org/10.17504/protocols.io.5jyl88j46l2w/v2>

Protocol Citation: Yuanzhuo Zhou, Kohei Asai, Hirohisa Kyogoku, Tomoya S. Kitajima 2025. BEAD INJECTION PROTOCOL. protocols.io <https://dx.doi.org/10.17504/protocols.io.5jyl88j46l2w/v2> Version created by [Yuanzhuo Zhou](#)



License: This is an open access protocol distributed under the terms of the **[Creative Commons Attribution License](#)**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Protocol status: Working

We use this protocol and it's working

Created: August 22, 2025

Last Modified: August 22, 2025

Protocol Integer ID: 225234

Keywords: bead injection protocol, bead injection protocol this protocol, bead injection, mouse oocyte, protocol

Abstract

This protocol describes workflow of the bead injection in mouse oocytes.

Materials

Rat anti-GFP antibody (D153-3, MBL), PBS, MonoMag Protein G-conjugated beads (1 μm diameter, MPG1000, or 3 μm diameter, MPG3000, Ocean NanoTech), mRNA-injected GV-stage oocytes, piezo pulse device.



Protocol

- 1 Prepare Rat anti-GFP antibody (D153-3, MBL) at 1:30 dilution in PBS.
- 2 Add MonoMag Protein G-conjugated beads (1 μm diameter, MPG1000, or 3 μm diameter, MPG3000, Ocean NanoTech) at 1:20 dilution to the antibody solution.
- 3 Incubate the mixture for 2.5 hours at 4 °C with rotation to immobilize the antibody to the beads.
- 4 Wash the antibody-bound beads with PBS.
- 5 Store the antibody-bound beads in PBS until use.
- 6 Introduce the anti-GFP-bound beads into mRNA-injected GV-stage oocytes by microinjection using a piezo pulse.
- 7 Inject either 4 beads (3 μm diameter) or 4–11 beads (1 μm diameter) per oocyte.
- 8 Culture the microinjected oocytes at 37 °C for 1 hour before meiotic resumption.