



Summary of Licence Application DIR 196

Takeda Pharmaceuticals Australia Pty Ltd (Takeda) has made an application under the *Gene Technology Act 2000* (the Act) for the commercial supply of a genetically modified (GM) dengue vaccine, Qdenga.

Project Title	Commercial supply of Qdenga, a live attenuated GM dengue vaccine
Parent organism	Dengue virus serotype 2 strain PDK-53
Modified trait	Altered antigen expression
Genetic modification	<p>A 'strain' is a genetic variant or subtype of a microorganism. Strains of dengue virus can also be categorised into 4 distinct 'serotypes' based on their surface antigen expression. The GMOs in this application are derived from a serotype 2 strain.</p> <p>The GM vaccine contains 4 live attenuated (weakened) strains of dengue virus:</p> <ul style="list-style-type: none">• One dengue serotype 2 strain (TDV-2) that has been attenuated through spontaneous mutations that occurred during a subculturing process in tissue culture.• Three strains where the pre-membrane (<i>prM</i>) and the envelope (<i>E</i>) genes in the TDV-2 backbone have been replaced with <i>prM</i> and <i>E</i> genes from dengue serotypes 1, 3, or 4 to create TDV-1, TDV-3, and TDV-4, respectively. <p>The expressed <i>prM</i> and <i>E</i> glycoproteins are present on the surface of the dengue viral particles. They are recognised by the human immune system. As a tetravalent vaccine (4 strains), Qdenga is intended to stimulate immune responses against all 4 dengue virus serotypes.</p>
Proposed locations	Australia-wide for travellers
Principal purpose	Commercial supply of the GM dengue vaccine
Previous approvals	<p>The GM vaccine has not previously been approved in Australia.</p> <p>Internationally, the GM vaccine has been approved by health authorities in Indonesia, the European Union, and Great Britain.</p>
Proposed period of release	From issue of licence

The application

Takeda is seeking approval for the import, storage, transport, and disposal of the GM Qdenga vaccine, as part of its commercial supply as a human vaccine against dengue virus. Dengue is a common mosquito-borne viral disease. The vaccine will be manufactured overseas and imported into Australia.

Other regulatory approvals

Before Qdenga can be registered as a human vaccine, its quality, safety, and efficacy must be assessed by the Therapeutic Goods Administration (TGA). If registered as a human vaccine, the TGA may impose conditions relating to the use and labelling of the GM vaccine. As Qdenga is manufactured overseas, a permit from the Department of Agriculture, Fisheries and Forestry will be required for its import into Australia.

Next steps

The Gene Technology legislation sets out what the Regulator must do, as well as what the Regulator can or must consider, before deciding whether or not to issue a licence for this application.

After seeking advice from prescribed experts, agencies and authorities, the Regulator's staff will prepare a consultation version of the Risk Assessment and Risk Management Plan (RARMP) considering aspects of the application in accordance with the legislation.

The Regulator will seek comment on the consultation RARMP from the public, as well as a wide range of experts, agencies, and authorities. The public and experts will be invited to provide submissions on the risks to human health and safety, and on risks to the environment from the proposed supply of the GM vaccine.

At this stage, the consultation RARMP is expected to be released for comment in **late August 2023**.

After consultation, the Regulator's staff will finalise the RARMP, taking into account advice on relevant matters. The finalised RARMP will form the basis of the Regulator's decision whether or not to issue a licence. The consultation and final versions of the RARMP and associated documents will be available on the [OGTR website](#) when they are released.

Other information available from the [OGTR website](#):

- 'Questions and Answers' document for this application
- information on Australia's national scheme for regulation of gene technology and
- information on the DIR application process.

Please use the contact details below, if you

- would like a copy of the application. Please include the identifier DIR 196.
- have any questions about the application or the legislated evaluation process or
- wish to register on the mailing list.

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