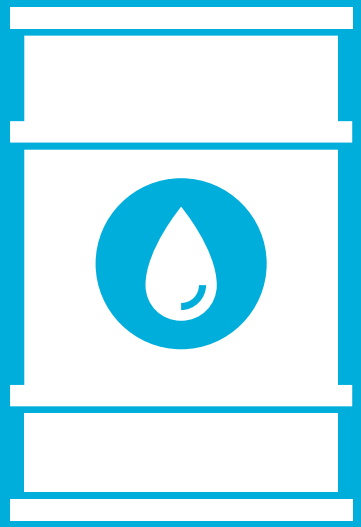
SYNTHETIC BIOLOGY: Changing the properties of natural fibres

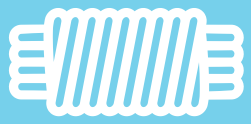
www.csiro.au

CSIRO

B&M | 18-00392

Many textiles are made in factories from petroleum products such as plastic.





Nylon

Polyester

Spandex

Acrylic

While these materials are highly functional, they contribute to pollution. When washed or discarded, plastic fibres are released into the environment.

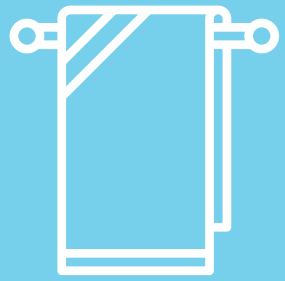
By comparison, textiles made from natural fibres such as cotton, flax, hemp and bamboo are completely biodegradable and come from renewable resources (i.e. plants).

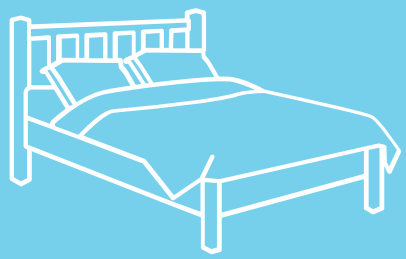
Cotton

Flax

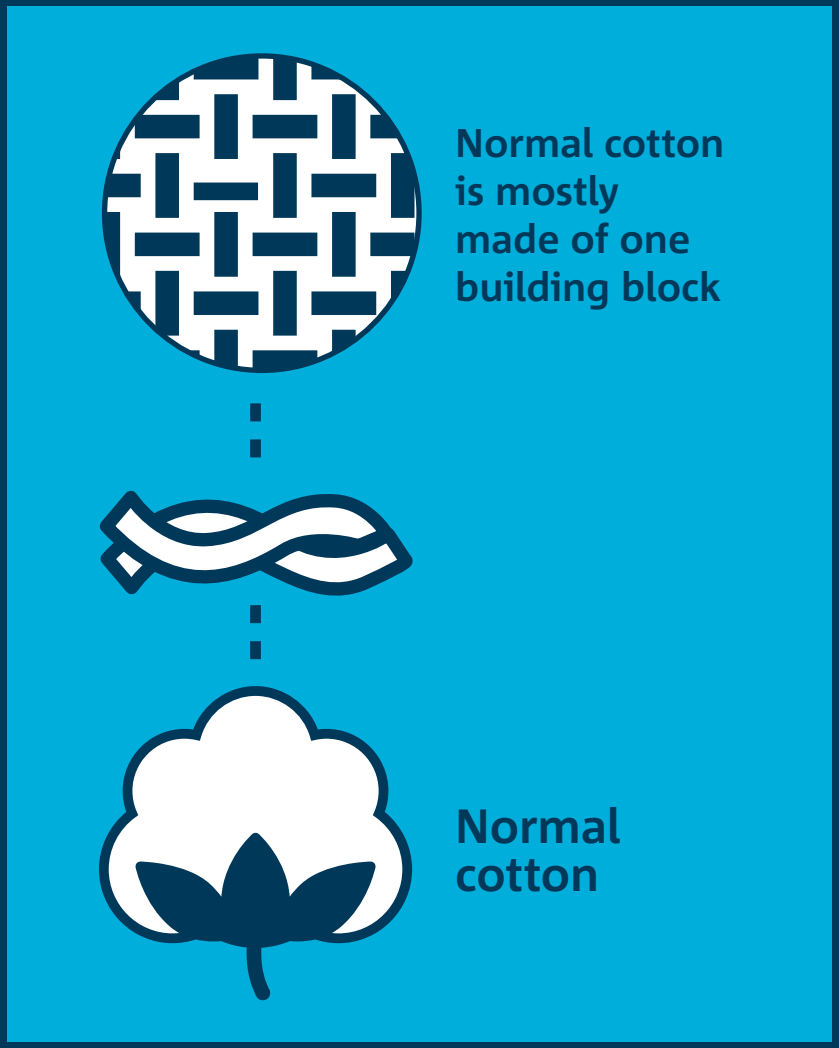
Hemp

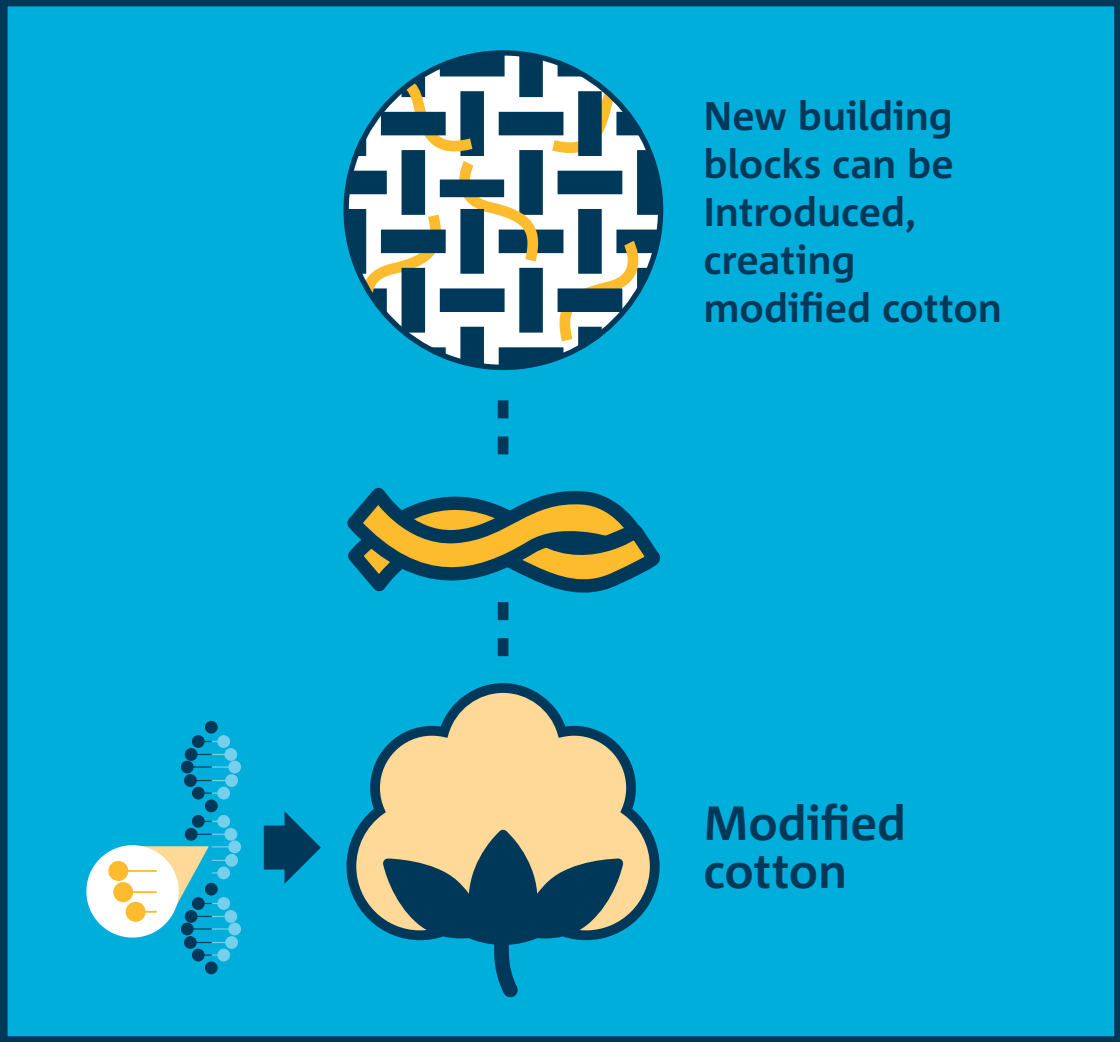
Bamboo





With new synthetic biology technology, it would be possible to use DNA to give plants the ability to produce natural fibres with different properties.

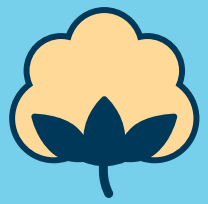




Consumers will then have the option of buying natural textiles with different properties.

For example, the properties of cotton could be changed so that the fabric is...

...creaseless
(no ironing needed)

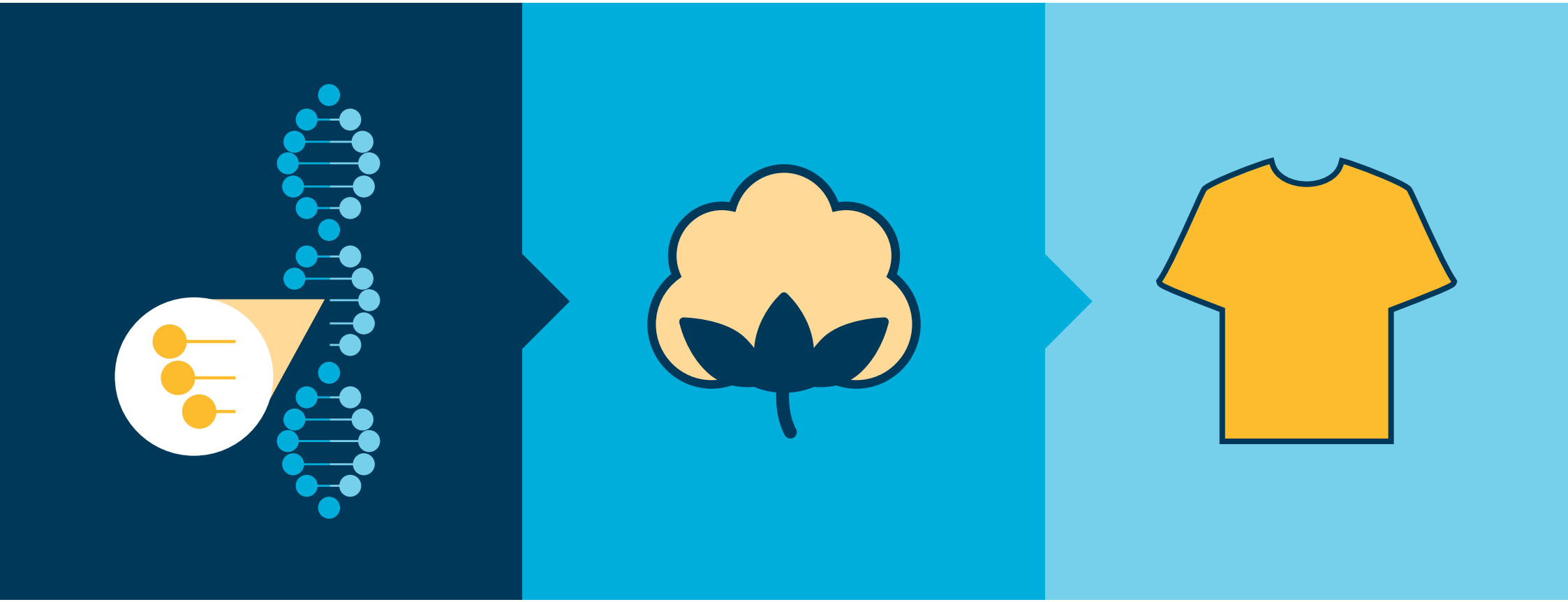


...pre-coloured
(no dyes needed)

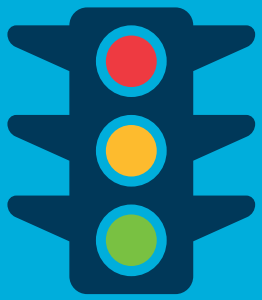
...sun smart
(UV protection)

...waterproof,
quick-drying,
cool/warm, fire safe

By changing natural fibres, it will be possible to produce textiles made from natural fibres that mimic the properties of factory-made fibres.



This could reduce global reliance on factory-made fibres and reduce plastic and chemical pollution globally.



This technology would likely be approved and/or regulated by:

The **Office of the Gene Technology Regulator**

The State-based **Biological Control Act**

The State-based **Department of Agriculture**

Together these regulatory bodies and standards would ensure that:

- The research and development occurs under controlled laboratory conditions, and
- Any environmental, ecological and health risks or concerns are properly reviewed and addressed.

Australian residents like you may have the opportunity to ...

- Take part in public events where scientists share their research on the technology
- Participate in online or face-to-face discussions to ask questions and share your thoughts about the technology
- Sign up to receive regular updates on the technology development

COPYRIGHT

© Commonwealth Scientific and Industrial Research Organisation 2018.
To the extent permitted by law, all rights are reserved and no part of this publication covered by copyright may be reproduced or copied in any form or by any means except with the written permission of CSIRO.

IMPORTANT DISCLAIMER

CSIRO advises that the information contained in this publication comprises general statements based on scientific research. The reader is advised and needs to be aware that such information may be incomplete or unable to be used in any specific situation. No reliance or actions must therefore be made on that information without seeking prior expert professional, scientific and technical advice. To the extent permitted by law, CSIRO (including its employees and consultants) excludes all liability to any person for any consequences, including but not limited to all losses, damages, costs, expenses and any other compensation, arising directly or indirectly from using this publication (in part or in whole) and any information or material contained in it.

CSIRO is committed to providing web accessible content wherever possible. If you are having difficulties with accessing this document please contact us csiro.au/contact.