



# ORGANISATION FOR THE PROHIBITION OF CHEMICAL WEAPONS

Working Together For a World Free of Chemical Weapons

## Recommendations From The OPCW Scientific Advisory Board's Report on Convergence of Chemistry & Biology

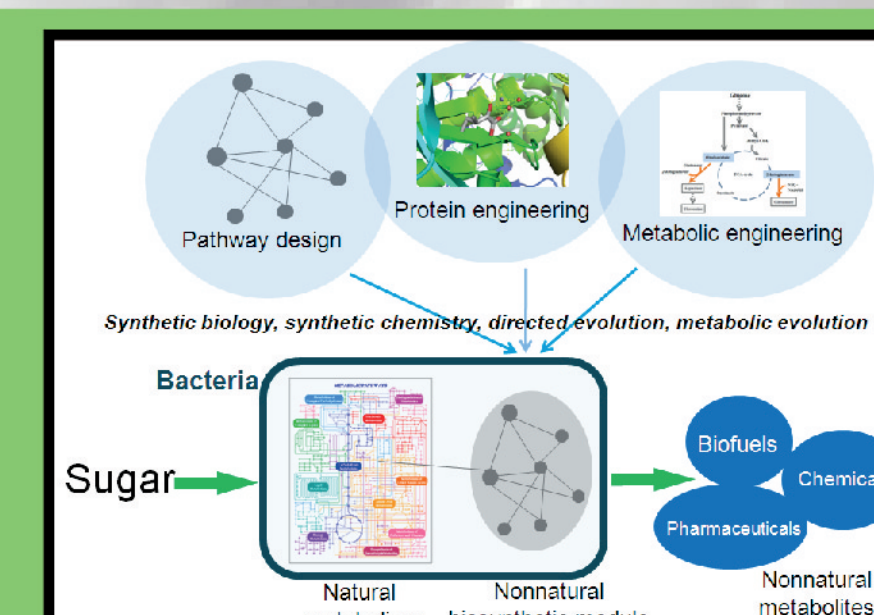
### Recommendation 1

The SAB, or a suitable TWG, and the TS should continue to monitor advances in production facilities and technologies, and related trends such as outsourcing and modularisation of equipment. Assessments should be made on a periodic basis to determine their relevance to verification under the CWC. Regular engagement with subject matter experts, e.g. from the biotechnology industry, will be required.



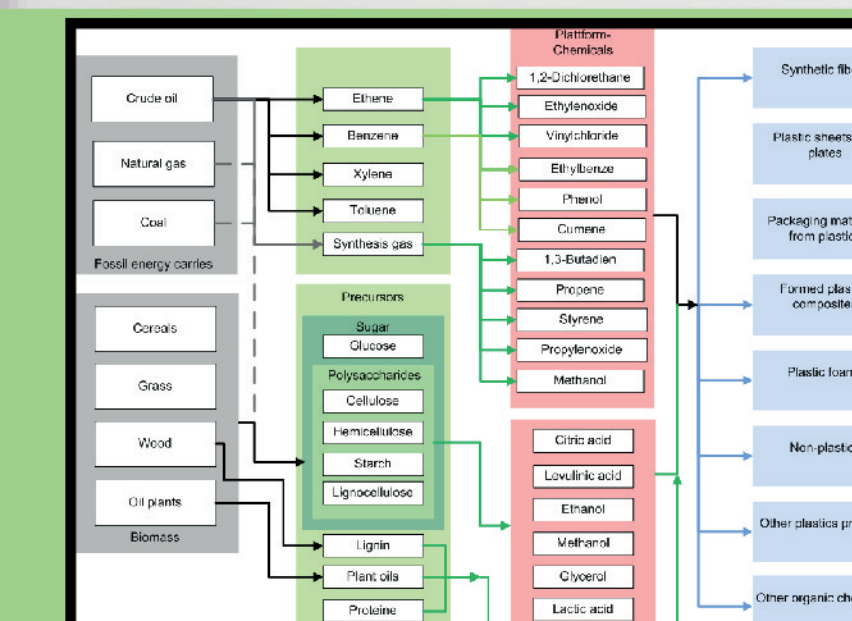
### Recommendation 2

The SAB should monitor developments in biological and biologically-mediated chemical production processes, such as metabolic engineering, synthetic biology and associated enabling technologies. Regular engagement with subject matter experts will be required.



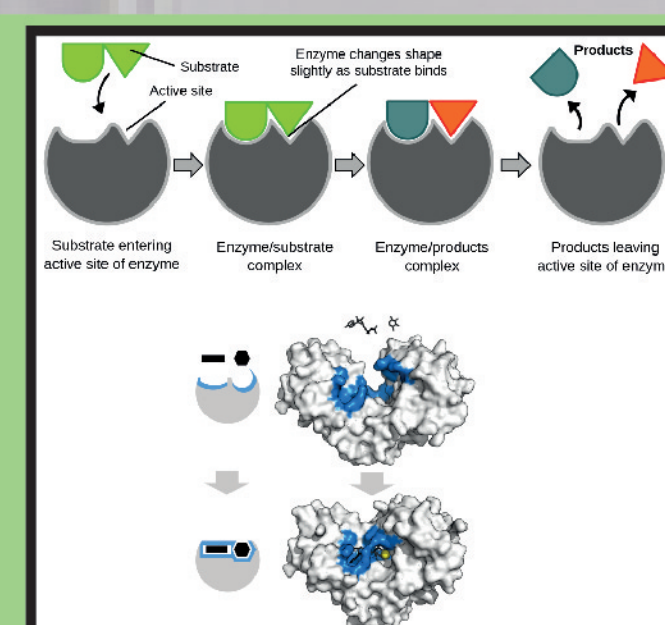
### Recommendation 3

The SAB should continue to monitor the range of chemicals being studied and produced using biological or biologically-mediated processes.



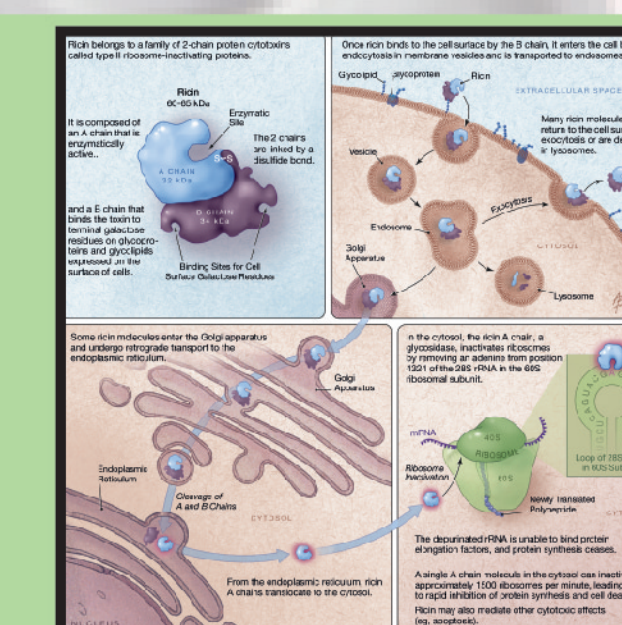
### Recommendation 4

The SAB, or a suitable TWG, should review advances in rational enzyme design prior to the next review conference.



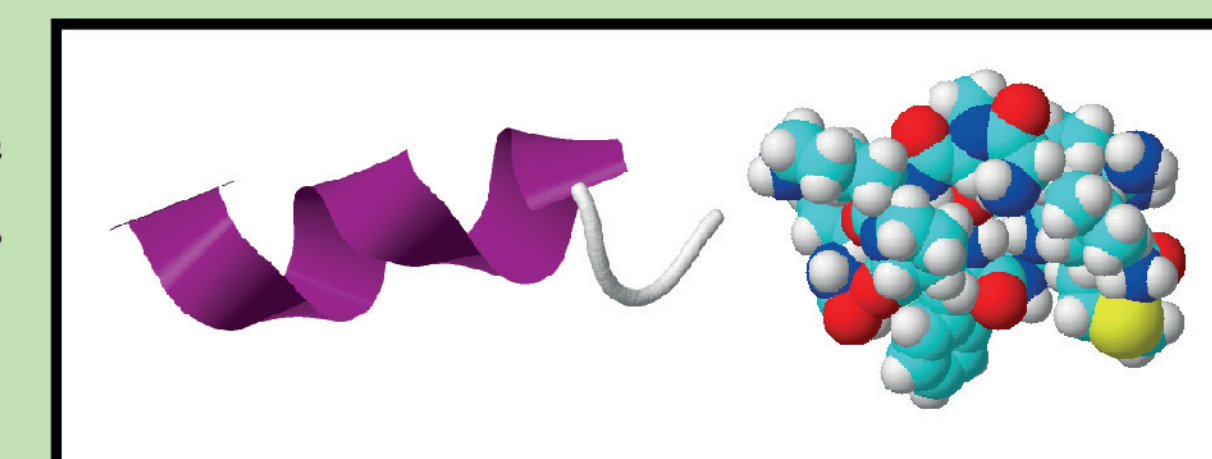
### Recommendation 5

The SAB, or a suitable TWG, should review the feasibility of using metabolic engineering or synthetic biology to obtain toxins prior to the next review conference.



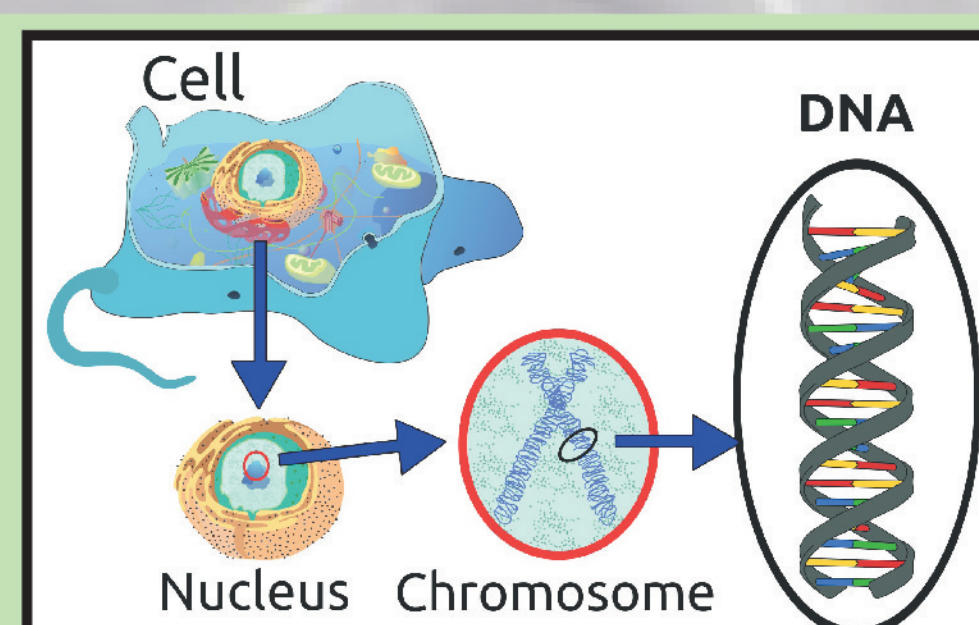
### Recommendation 6

The TS should increase and maintain in-house knowledge of bioregulators, and possible applications of new developments in drug delivery.



### Recommendation 7

The SAB, or a suitable TWG, should review the synthesis of replicating organisms prior to the next review conference.



### Recommendation 8

The SAB, or a suitable TWG, should review progress in the use of enzymes for decontamination prior to the next review conference.



### Recommendation 9

The OPCW should monitor advances in protective equipment and possible applications for OPCW personnel as they become commercially available



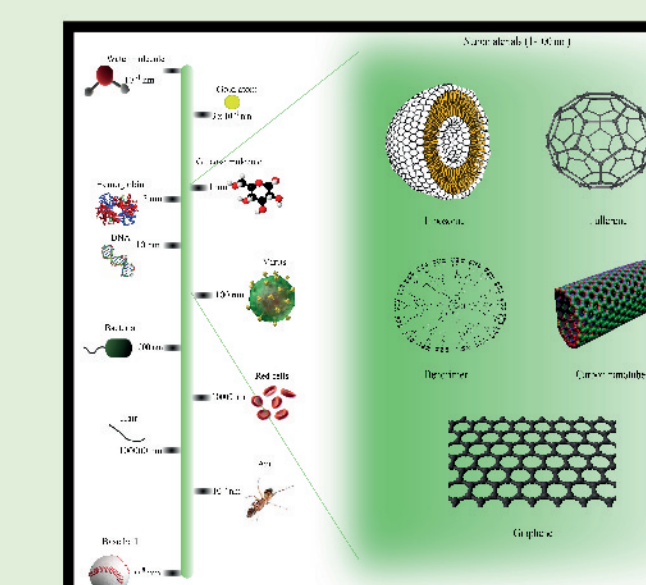
### Recommendation 10

The OPCW should consider possible applications of diagnostic devices to on-site activities as they become commercially available.



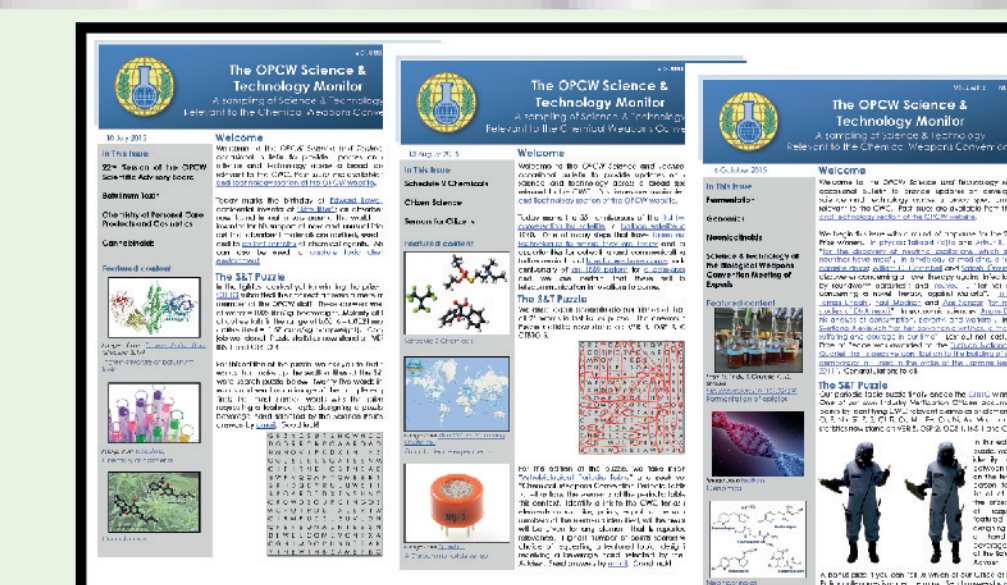
### Recommendation 11

The SAB should monitor advances in nanotechnology prior to the next review conference. Regular engagement with subject matter experts will be required.



### Recommendation 12

The SAB and TS should examine ways to increase and maintain in-house, high level knowledge of a broader range of scientific disciplines.



<https://www.opcw.org/special-sections/science-technology/science-technology-monitor/>

### Recommendation 13

A venue like the TWG on convergence of chemistry and biology should continue to exist, possibly as a temporary working group or a standing arrangement under the SAB.



### Recommendation 14

National Authorities could be encouraged to engage more actively on convergence issues, including interacting with relevant biological and chemical scientific communities and hosting relevant events. A standing item on science and technology at National Authority Days might provide an opportunity to promote and report back on such an activity. Adopting convergence as a major theme for a future National Authority Day would help draw attention to this issue.



### Recommendations 15 & 16

The SAB and TS should continue to work across areas of overlap between the CWC and the BWC. The Director-General might ask States to consider knowledge of the biological sciences when considering nominating experts to the SAB.

The TS, supported by the SAB, should continue to participate in such meetings and continue to address convergence.



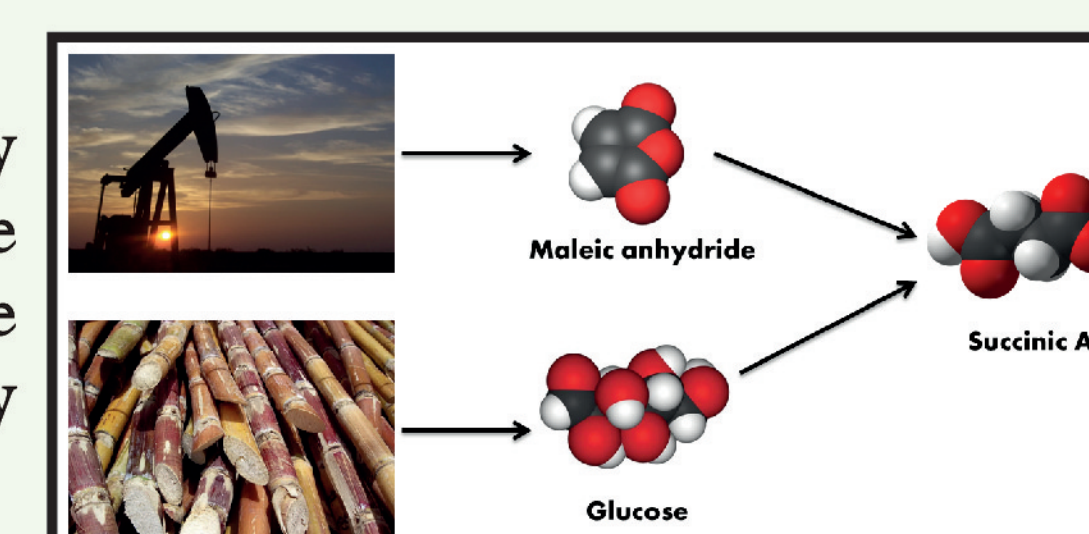
### Recommendation 17

The Director-General might consider meeting with the Chair of the BWC and heads of relevant international scientific bodies to explore issues around convergence.



### Recommendation 18

Taking into consideration the convergence of chemistry and biology as it relates to the synthesis of chemicals, the TWG was of the view that any process designed for the formation of a chemical substance should be covered by the term "produced by synthesis".



### Recommendation 19

The TS should review the technical feasibility of converting a bio-based chemical processing facility to produce chemicals of concern to the CWC.

