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SCIENCE MEDICINES HEALTH

Support to Innovation by EMA – Facilitating Translation of Technology into Medicinal Products

CASSS CMC Strategy Forum Europe 2022

Presented by Dr. Robert N. Bream on 19th October 2022
Senior Pharmaceutical Quality Specialist, EMA

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- EU Innovation Initiatives
- The Quality Innovation Group
  - Vision
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EU Rich in Strategies on Innovation → Challenge is Translation into Outcomes

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Focussing Regulatory Science on support to innovation

https://www.ema.europa.eu/en/documents/regulatory-procedural-guideline/ema-regulatory-science-2025-strategic-reflection_en.pdf

Goal 1: Catalysing the integration of science and technology in medicines' development

- Facilitate the implementation of novel manufacturing technologies
- Support translation of ATMPs into patient treatments
- Develop understanding of, and regulatory response to, nanotechnology and new materials in pharmaceuticals

Goal 5: Enabling and leveraging research and innovation in regulatory science

Quality Innovation Group

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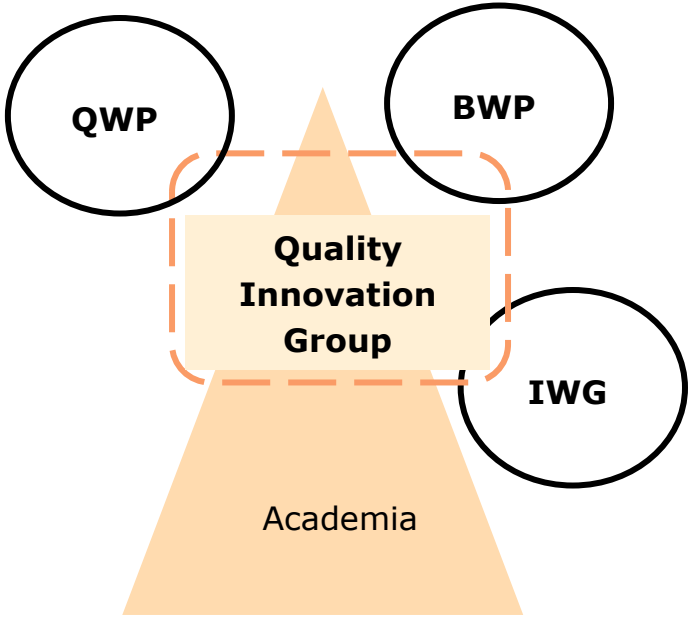
➢ Delivery of strategic network priority on Innovation



- Multidisciplinary expertise (assessment/inspection)
- Close link to working parties
- Academic expertise

Technology/innovation focused
→ Guidance (scientific & regulatory)

Product-specific support pathways

Harmonisation, training and knowledge building

QIG - the Vision

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EMRN

Predictable reg framework
Incentivise EU innovation

Training, guidance

Support

International regulatory convergence

FDA pmda ICH PIC/S ICMRA IPRP International Pharmaceutical Regulators Programme

QIG

Core + ad hoc experts
→ translate innovation into patient benefits

Assessment support

Quality domain: **BWP/QWP/IWG** liaison

Academic expertise
Research projects

Support from development throughout lifecycle

Point of entry to EMRN
Informed open discussions

Links

EU Innovation network, ITF, National IOs

Innovation Task Force (ITF) – Current Innovation Interface

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Multidisciplinary platform

for preparatory dialogue and orientation on

innovative methods, technologies and medicines

Support **innovative** drug development

Early informal dialogue with opinion leaders on

- **Scientific, legal and regulatory** issues
- Products, **methodologies and technologies**

Free of charge

Brainstorming "style" on innovation in areas without existing guidance

First step to engage is submit completed 3-page template

Technical & Regulatory Challenges

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CMC examples from recent ITF meetings

	Extemporaneous 3D printing	**Gene Editing Platform**	**Agile manufacturing (biological)**
Product description	3D-printed patient-specific tablet strength	*In vivo* non-viral delivery Gene Editing Platform (CRISPR)	Flexible manufacturing facility for different APIs in the same building (+ Pharma 4.0)
Questions	• Can printing cartridge containing components be considered the FP? • GMP requirements and quality control • Flexible dosage range	• Orphan designation / ATMP classification • GMP & supplier requirements • quality control & characterisation	• Regulatory strategy/EMA interaction • PAT and (cross-) control strategy • Validation approaches • Guidance for AI
Key challenges	• Compatibility with **current legislation** • **Control/oversight** of printing process locally	• **International alignment** • Early engagement on **GMP aspects** • **Characterisation + control**	• **Tailored scientific advice** • **Guidance limited** (implementation strategy / process modeling)

ITF and QIG

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Innovation Task Force (ITF)

Early informal meetings to support **innovative drug development**

- Early landing platform
- One off, follow-up usually not planned
- Scope: multidisciplinary
- Covers products, technologies, development approaches with an innovative component
- Industry and Regulators (EMA/network)

Quality Innovation Group (QIG)

Product-specific support on **key technology topics**

- Eligibility based on topic priorities & maturity of technology
- Scope: manufacturing/CMC and facilities
- Follow-up product-specific interaction across lifecycle
- Industry with Regulators (EMA/network) & Academia
- International outreach
- Scientific guidance development

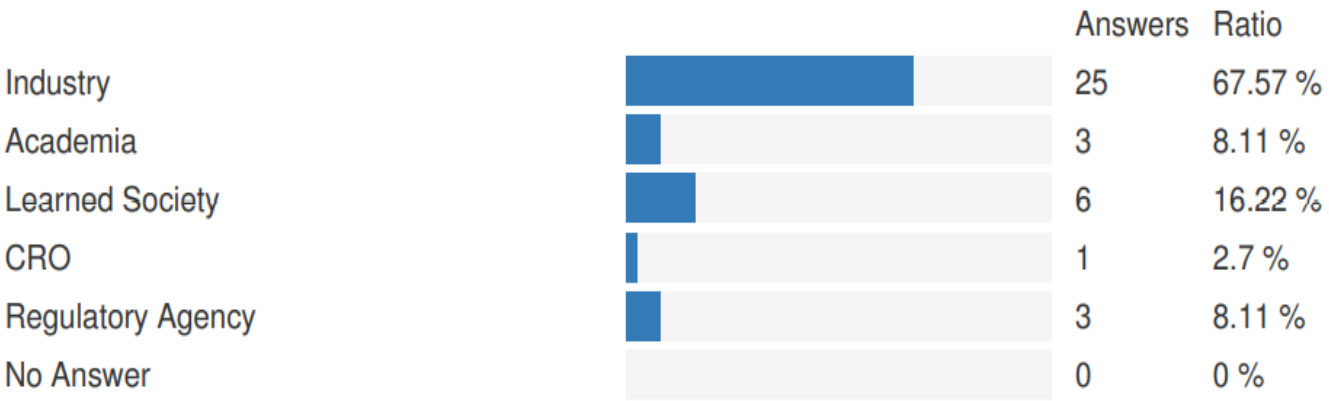
Where does QIG focus? EMA's survey on Innovation

Feedback from stakeholder survey

Survey: Dec 21 – Feb 22

- What will be implemented in coming years?
- perceived barriers in current legislation/guidance?
- Proposed change in legislation/guidance?

Type of organisation



	Answers	Ratio
Industry	25	67.57 %
Academia	3	8.11 %
Learned Society	6	16.22 %
CRO	1	2.7 %
Regulatory Agency	3	8.11 %
No Answer	0	0 %

Total: 37 inputs (34 H + 3 V)

Manufacturing Technology + Facility Design

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- **Continuous manufacturing** (API, FP, chem and Bio) including e.g. microfluidics
- **Pharma 4.0** – digitalisation, automation, robotics, AI
- **Decentralised manufacturing:** modular equipment including scale out, autonomous portable facilities, bedside manufacture (e.g. ATMPs, gene editing)
- 3D printing/additive manufacturing
- Cell processing technology (e.g. automated cell culture, high density cell banks, cell free transcription)
- mRNA platform technology
- Sterile filling technology (e.g. micro-filling) and requirements for sterile grade areas
- Flexible facility layouts with physical/spatial separation of operations and/or closed manufacturing systems, single use manufacturing equipment

Analytical Technology + Control Strategies

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- **PAT,** i.e. in-line/at-line/on-line analysis sensors, NIRS and RAMAN for RTRT and process control (including feedback loops)
- **Data (*in silico*) modelling**, statistics and digitalisation (predictive)
- Rapid biological methods (e.g. qPCR, solid phase cytometry)
- Novel biological methods (e.g. NGS, flow cytometry, conformational analysis/tomography, cell binding potency assays
- Multi-attribute methods
- Sterility methods
- Structural analysis methodology (size, conformation, macromolecule analytes)

Drug Delivery Systems, Devices, Digitalisation, Materials

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- **Wearable devices with sensors** (e.g. for dosing, monitoring, efficacy)
- **Patient compliance monitoring technology** (wearable sensors, packaging/container closure, digitalised with e.g. cloud/AI link)
- Excipients including **nanomaterials** (inorganic, polymeric including peptides, lipids)
- Diagnostic devices
- Biomaterials including implants/inhaled (e.g. with surface modification, coated or bio-conjugated)
- ATMP delivery systems/devices
- Micro-projection arrays (devices, vectors)
- Sensors for other purposes (anti-counterfeiting, stability and storage condition monitoring)
- Digitalisation and modelling (e.g. automation of process/method optimisation)

Other CMC Developments

- **Digitalisation** of dossiers + inspections
- Electronic PI
- Novel packaging formats and materials
- Stability **modelling**
- *In silico* prediction of properties (e.g. impurities, PK/PD)
- **Sustainability** (green chemistry, biocatalysis, replacement of animal methods, efficiency of equipment use)

General points:

- Pursue **global harmonisation** on standards, guidance via ICH, PIC/S etc.
- Create a **point of contact** and **framework for interaction** on novel manufacturing technologies

Perceived Barriers and Legislative Changes

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Main points (mentioned frequently):

- **Guidance on novel technologies** which are not yet implemented in any products

- **Change of legislation** necessary: current legislation considered too restrictive (e.g. alternative processes for biologics)
- Update to **outdated guidance** (i.e. at EU and ICH level)
- Implementation of in draft / adopted ICH guidance in EU (e.g. Q12, Q13, Q14)

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What is happening right now?

Constitution

- Members
- Mandate
- Kick-off

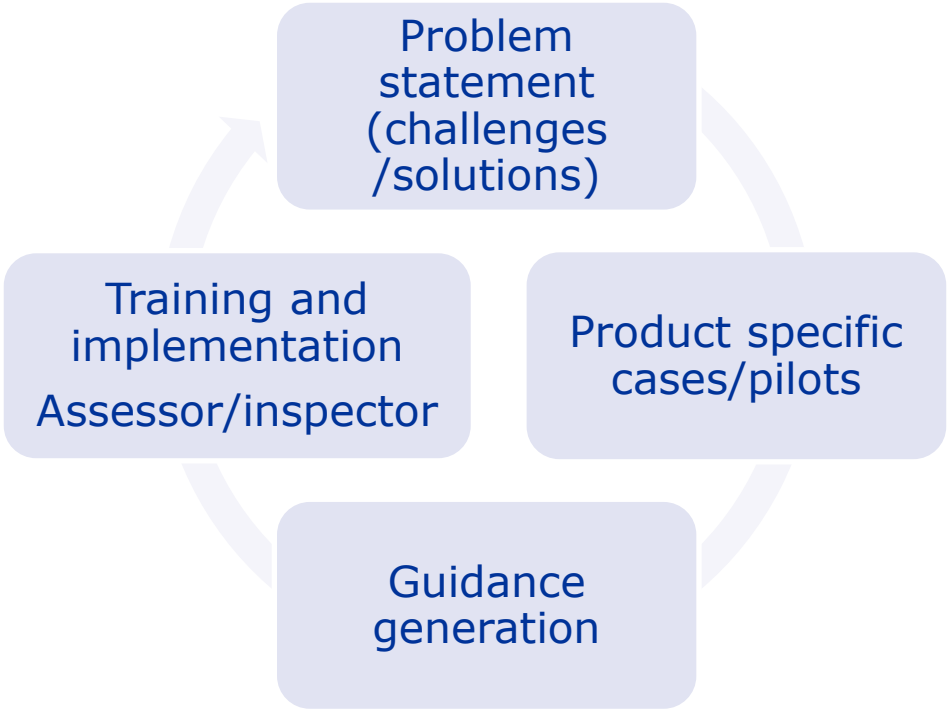
Processes

- Product development + review
- Link into EMA processes/ITF/ EU-IN
- Engagement strategy
- International outreach

Topics

- Intelligence gathering
- Priority topics
- Workplan
- Listen-learn focus groups
- Academic expertise

What can Industry Expect?



- Engagement through stakeholder organisations/IP platform
- 1-1 Engagement pathways on eligible product developments (i.e. SA/initial MAA)
- Topic-specific guidance
  - Timing key

Key points

- Support to innovation is a **key priority** for EMA & EU regulatory Network
- Innovation in manufacturing & product design is associated with **challenges** → lack of guidance, legal framework, time & resources, divergencies between regions etc.
- **Solutions:** specialised guidance, flexible legislation, international harmonisation on technical requirements, predictability & direct communication channels
- **Quality Innovation Group**: product specific & ongoing support on key technology; engagement on priority topics with relevant stakeholders

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Any questions?

Further information

[Insert relevant information sources or contact details as applicable.]

Official address Domenico Scarlattilaan 6 ● 1083 HS Amsterdam ● The Netherlands
Telephone +31 (0)88 781 6000
Send us a question Go to www.ema.europa.eu/contact

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Back-ups

Existing opportunities for dialogue with EMA on CMC innovation

EMA Innovation Task Force (ITF) meetings

https://www.ema.europa.eu/en/human-regulatory/research-development/innovation-medicines#ema's-innovation-task-force-(itf)-section

EU innovation network

Innovation in medicines | European Medicines Agency (europa.eu)

Scientific Advice/Protocol Assistance

https://www.ema.europa.eu/en/human-regulatory/research-development/scientific-advice-protocol-assistance

QWP/BWP Interested parties (IP) meetings

Global convergence through ICMRA

Collaboration with academia

Academia | European Medicines Agency (europa.eu)