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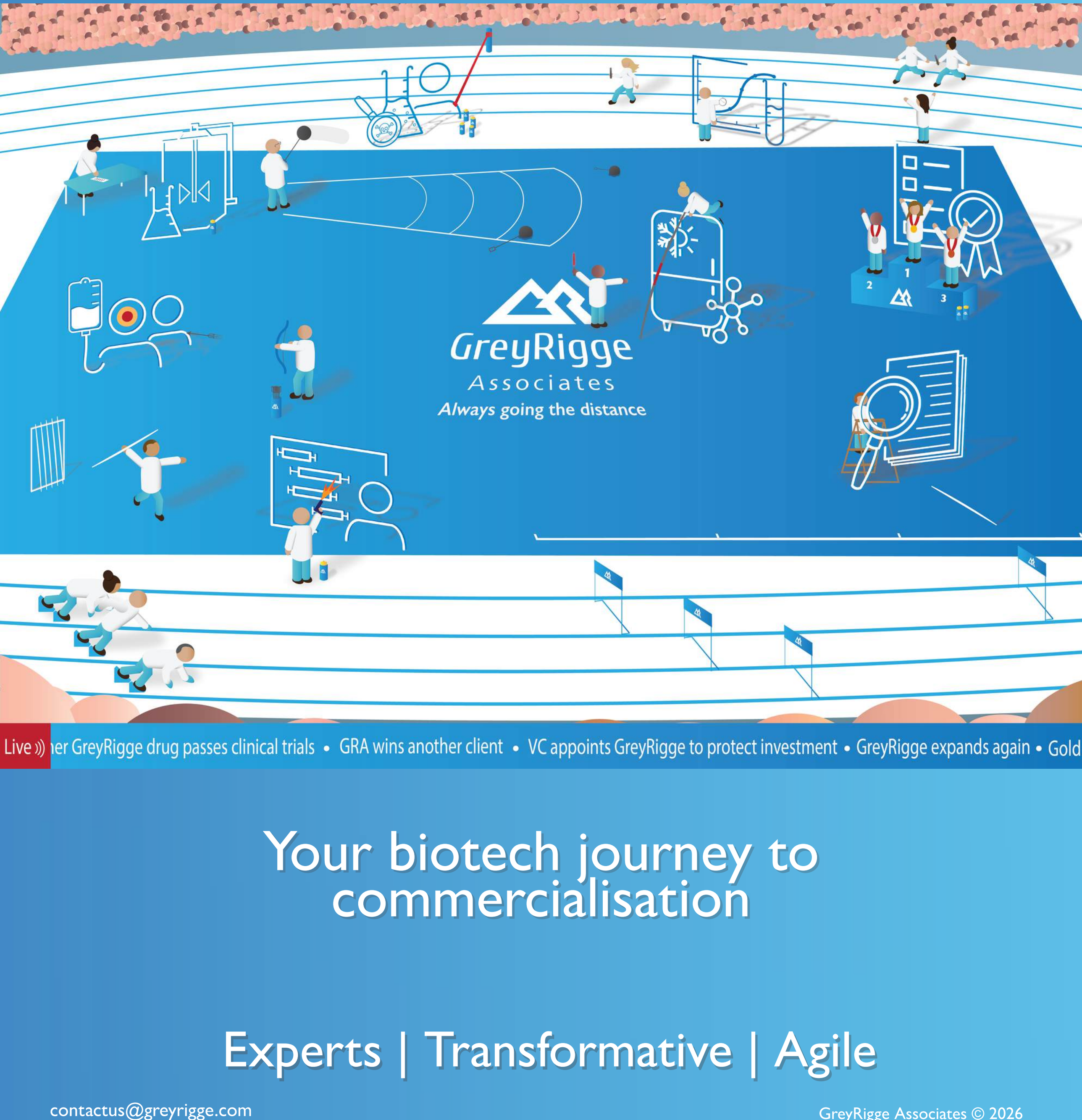
Going for Gold



Live))) ner GreyRigge drug passes clinical trials • GRA wins another client • VC appoints GreyRigge to protect investment • GreyRigge expands again • Gold

Your biotech journey to commercialisation

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CMC & Manufacturing

1. Good Manufacturing Practice

Good Manufacturing Practice (GMP) ensures that manufacturing processes meet defined quality standards. This includes documentation, validated procedures, trained personnel and controlled environments. The GMP framework helps maintain compliance and data integrity, as well as safety. It also helps ensure that processes perform as intended over time.

2. Pure & Potent Product

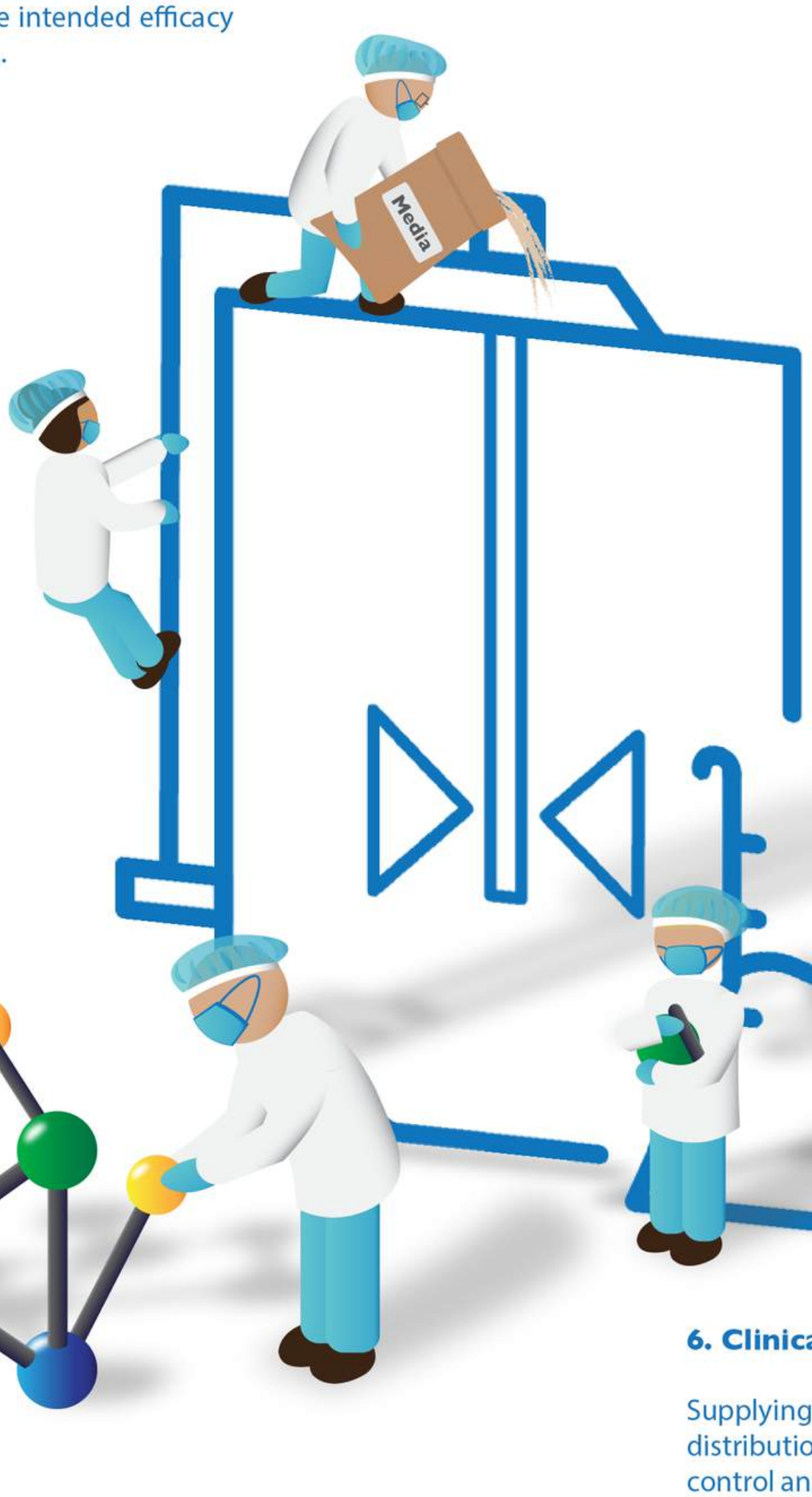
Product purity and potency are assessed at multiple stages of development using analytical and/or Quality Control methods. The focus is to ensure that the product's active substance consistently meets its required specifications for identity, strength and purity. This guarantees that the product always delivers the intended efficacy and is entirely safe for patients..

3. Process Charactrisation

Process characterisation involves identifying and understanding the impacts of critical process paramters (CPPs), or Inputs, on the critical quality attributes (CQAs) of the product, or outputs. Data from scale-down models (SDMs) and experimentation inform control strategies. This builds a robust knowledge base, supporting decision-making as well as process performance qualification (PPQ), also called process validation, across the product development lifecycle.

4. Process Scale Up

During development, a process needs to be taken from small scale to full commercial scale whilst maintaining performance. Parameters identified as important during development are modelled in scale down models (SDMs), validated and used in controlling the process at full scale. The aim, on scaling up, is to retain process consistency, reliability and compliance as production scale increases, ultimately in preparation for PPQ readiness.



5. Quality by Design (QbD) & Robust Processes

Applying Quality by Design (QbD) principles to processes allows definition & control of critical process parameters (CPPs) & ranges. Design (Proven Acceptable Ranges) and control (Normal Operating Ranges) spaces are established that maintain process consistency. This allows production teams to work within predefined limits which ensures that the critical quality attributes of the product remain within specification as well as providing regulatory flexibiity for any future process modifications.

6. Clinical & Commercial Supply

Supplying material for late stage clinical trials & commercial distribution requires validated & robust processes with clear control and traceability from Manufacturing to Clinical administration. The goal is to ensure efficient batch-to-batch consistency that is in compliance with global standards, enabling reliable production and timely supply of product, whether for late stage clinical trials or for commercial supply.

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CDMO Management

1. Programme Planning

Effective biopharmaceutical development starts with detailed programme planning. This includes defining objectives, timelines & deliverables across functions. Leadership, flexibility & effective communication are essential in building a roadmap that reflects the program's complexity while aligning internal & external teams on deliverables.

2. Project Budgeting

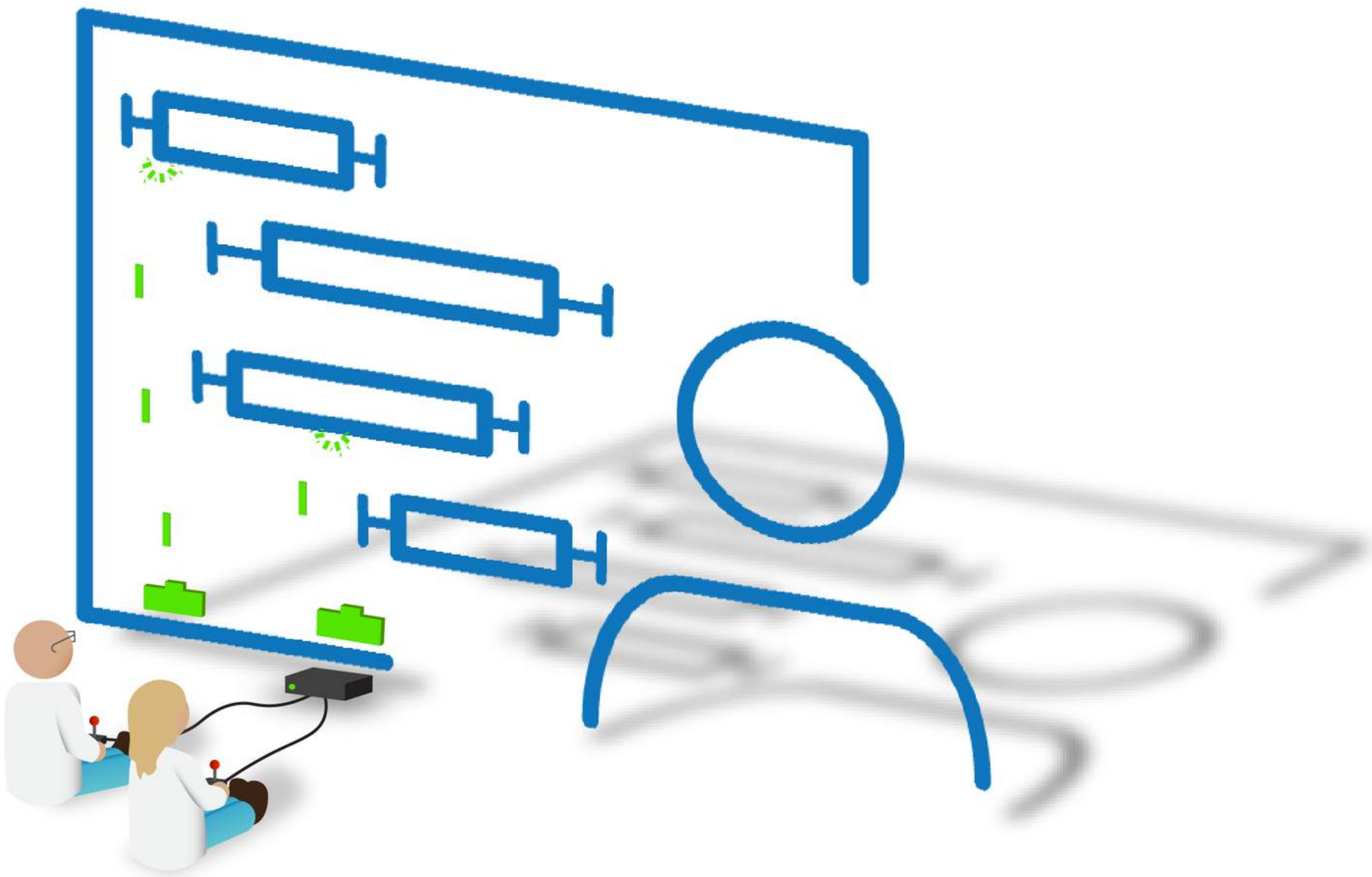
Budgeting involves forecasting costs across phases, identifying resource needs & managing risks. Effective budgeting & monitoring ensures that funds & resources are allocated efficiently & transparently. Resource optimisation and clear financial oversight are critical for maintaining programme stability & ensuring progress through each milestone.

3. Contracts & Agreements with CDMOs

Contracts define responsibilities, timelines, quality standards & risk-sharing models between sponsors & CDMOs. Agreements provide structure & accountability while maintaining flexibility for changes. Clear communication, shared expectations & trust underpin productive collaboration throughout development & manufacturing activities.

4. CDMO Proposals

Evaluating CDMO proposals requires understanding technical feasibility, cost drivers & timelines. Proposals must reflect realistic assumptions, resourcing capacity & phase appropriate regulatory requirements. A sound review process helps identify appropriate & reliable partners as well as ensuring alignment with programme requirements & goals.



5. Project plans & Gantt Charts

Structured project plans & Gantt charts map out interdependencies and timelines. These tools support risk management & enable teams to transparently track progress against defined deliverables. Adjustments, based upon real world situations, help keep projects on time and well-managed.

6. Risk Registers

Risk registers document known & potential risks across a programme, capturing likelihood, impact & mitigation strategies. They enable proactive risk management by ensuring all stakeholders are aligned on critical uncertainties. Regular review support timely, informed decision-making throughout development & well as capturing accountability.

7. CDMO Relationship Management

Beyond contracts, effective CDMO management involves trust, consistent communication & alignment on shared goals. Building collaborative, accountable relationships fosters resilience and adaptability. This is especially important when navigating changes, resolving challenges that are certain to arrise during the clinical development pathway.

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Assay & Quality Control

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1. Product Critical Quality Attributes (CQAs)

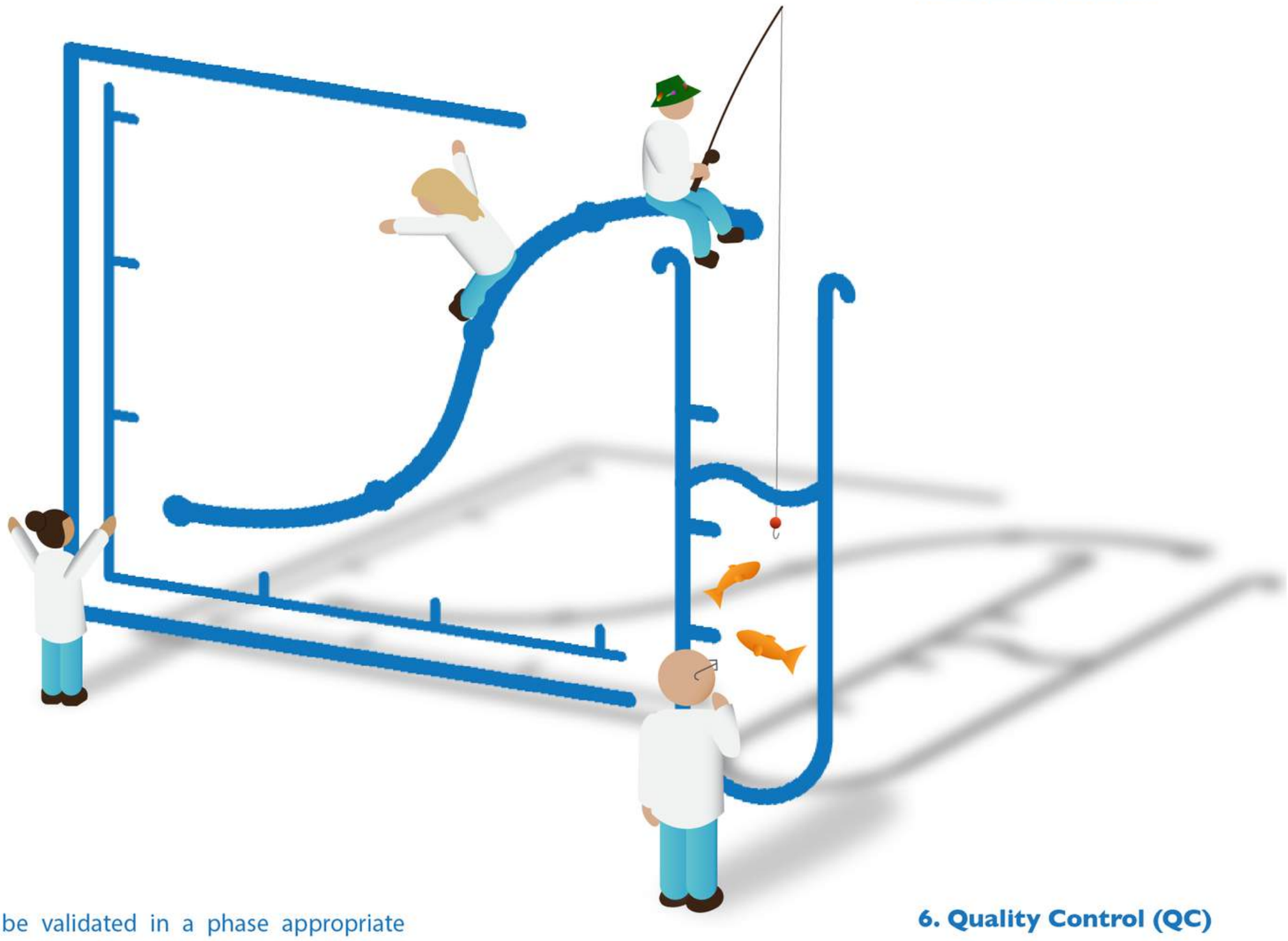
The Critical Quality Attributes (CQAs) of a product are essential information, with methods specifically developed to measure these. The product's specifications lay out what is to be measured, containing ranges and pass/fail criteria on which product is released.

2. Analytical Development

Analytical methods must be rigorously developed that can help measure a product's identity, content, potency and impurities. Ultimately these methods are used by Quality Control (QC) to test the product.

3. Method Optimisation

Methods must be optimised to ensure that they are both robust and rugged. ICH Q14 provides detailed guidance and best practice for developers. Quality by Design principles can be applied, included Design of Experiments (DoE) approaches to systematically build reliable methods.



4. Validated

Methods need to be validated in a phase appropriate manner. This requires alignment with ICH Q2 regulatory guidance to ensure the method is fit for purpose. This includes specificity, accuary, linearity, precision and range.

5. Reference Preparations

Preparation of references to use as standards and controls, both positive & negative, are essential to ensure method control. Routinely testing controls during method use allows the analyst to be confident that the method is performing as expected and that the results generated at the time are valid.

6. Quality Control (QC)

Developed methods are routinely used to test products produced in manufacturing facilities working to Good Manufacturing Practice (cGMP) guidelines. QC methods are critical for ensuring that the integrity and quality of the biopharmaceutical throughout their development lifecycle.

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Formulation Development & Stability

1. Formulations meet Pharmaceutical & administration requirements

Biopharmaceutical formulation development begins by aligning the drug product with intended administration routes—oral, injectable, topical, IV, etc. Requirements include viscosity, pH & osmolality. Ideally simple formulations must support safe, efficient delivery while meeting regulatory expectations.

2. Safe & painless

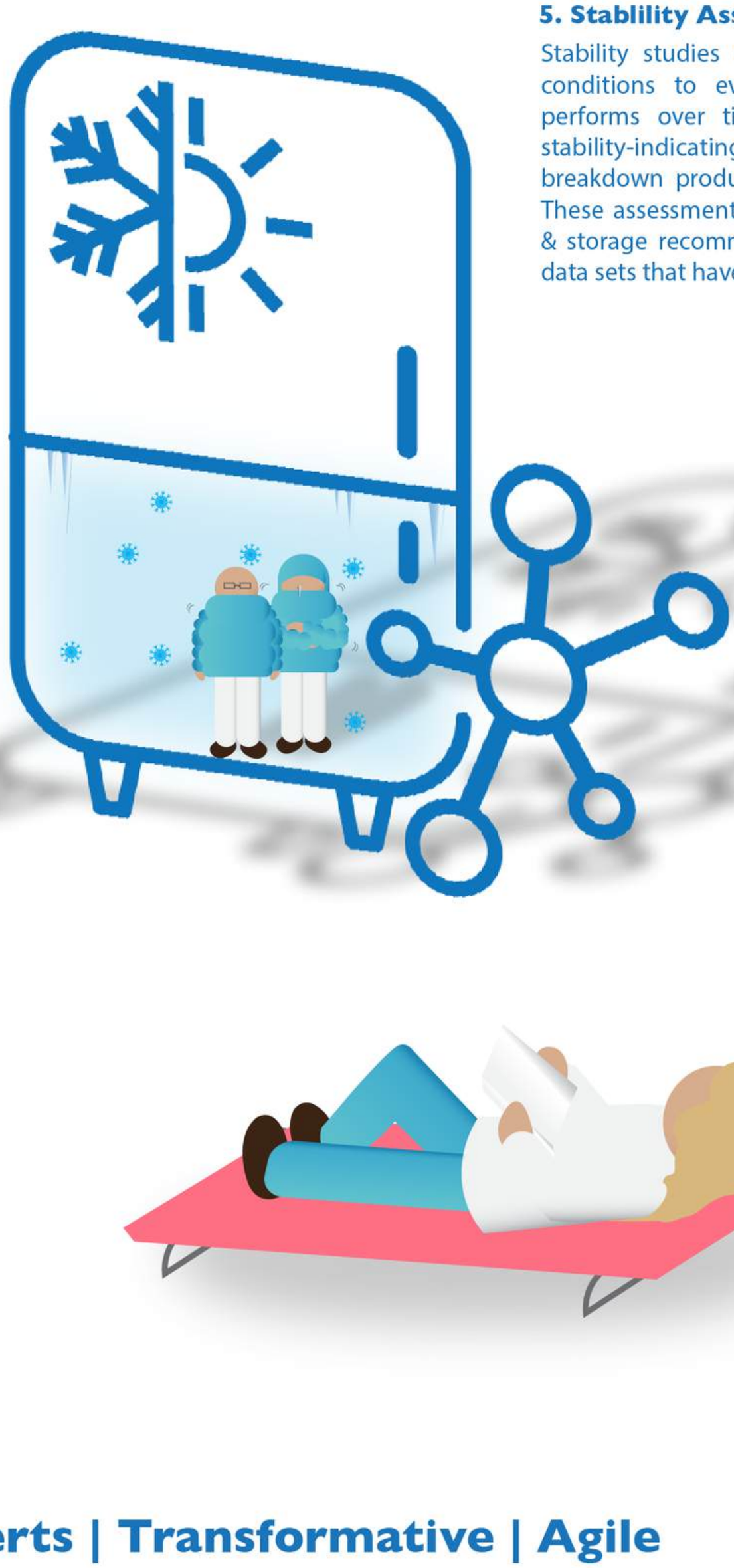
Patient comfort & safety are core design goals. This includes minimising site pain during dosing, optimising pH & osmolality & using accepted excipients. If well-formulated, a product should enable painless administration, especially for injectable or sensitive applications, as well as keeping the product stable & efficacious.

3. Compounding

Compounding involves combining multiple components to create a final, usable dosage form. This process must be traceable, robust & performed under defined conditions. Each excipient used must be compatible and stable to ensure it contributes to a consistent & safe final drug product.

4. Drug Substance and Drug Product Shelf Life

Shelf life is established through testing that defines how long a substance remains safe and effective. This is important for both the drug substance & final product. Expiry or re-test dates are based on analysis of multiple stability studies performed under different storage conditions that relfect future use.



5. Stablility Assessments

Stability studies use real-time & accelerated conditions to evaluate how a formulation performs over time. Forced degradation & stability-indicating methods should identify breakdown products as well as define limits. These assessments support labelling, shelf-life & storage recommendations based on robust data sets that have been statistically analysed.

6. Product Storage Conditions

Storage conditions—temperature, light exposure, humidity—directly affect product quality and safety. Stability studies determine appropriate parameters & packaging requirements. Use of cold chains, such as fridges and freezers help control of environmental conditions to ensure that the product's integrity is maintained from manufacture through to final use in the patient.

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QA, Auditing & Regulatory Affairs

1. National Regulatory Agencies, i.e. FDA, EMA, MHRA, PMDA

Working with national regulatory agencies involves understanding their expectations for compliance, data integrity and quality management systems (QMS). While similar, each agency has nuanced requirements and by staying aligned with their frameworks, this ensures that development, manufacturing and distribution activities meeting their expectations, are in control and audit-ready.

2. ICH Guidelines & Other Supporting Data for Characterisation and Comparability

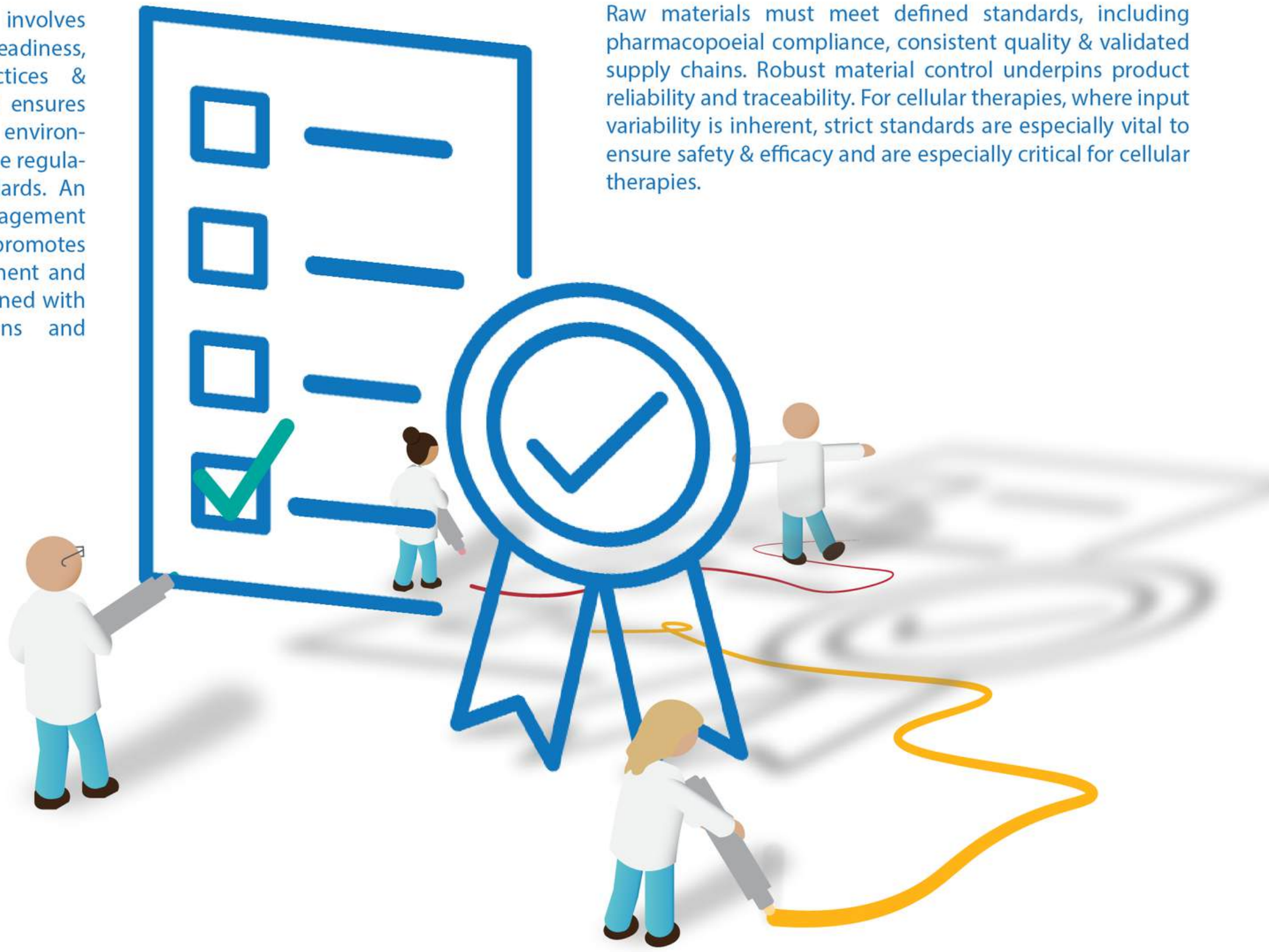
ICH guidelines provide internationally harmonised technical guidance across regions. They set out agency expectations in areas such as quality risk management, product development, validation, stability, etc. These frameworks enable consistent interpretation & application of regulatory expectations across different territories for biopharmaceutical development & operations.

3. Quality Technical Agreements (QTAs)

QTAs define responsibilities between sponsors and service providers. They formalise how compliance with Quality Managment Systems (QMS) and its related documentation will be controlled and managed, and which parties have responsibility. Well-structured QTAs support consistency, promote accountability and ensures that quality obligations are traceable and clearly understood by all parties involved.

4. Facility Compliance

Facility compliance involves routine inspection readiness, documentation practices & system validation. It ensures that manufacturing environments meet applicable regulatory and GMP standards. An effective Quality Management System (QMS) promotes continuous improvement and keeps operations aligned with evolving expectations and audit findings.



5. Material Standards

Raw materials must meet defined standards, including pharmacopoeial compliance, consistent quality & validated supply chains. Robust material control underpins product reliability and traceability. For cellular therapies, where input variability is inherent, strict standards are especially vital to ensure safety & efficacy and are especially critical for cellular therapies.

6. Pre-Approval Inspection (PAI)

A PAI evaluates production facility readiness for commercial distribution. It includes assessments of quality systems, data integrity management and validation status. Proactive auditing and consistent documentation are essential for demonstrating control to regulatory agencies and is a critical stage prior to commercial production.

7. Pharmacopoeia Requirements

Pharmacopoeias vary by country, i.e. US, British, Japanese pharmacopeia, etc.. However, all define quality expectation and standards for raw materials excipients & finished products. Meeting these requirements ensures consistency, traceability & compliance across the supply chain. Adherence is essential for demonstrating product integrity and supports audit readiness and regulatory approval in both clinical and commercial settings.

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Preclinical, Non-Clinical & Toxicology

1. Mode of Action

Understanding the mode of action (MoA) is foundational in preclinical development. This involves characterising how a therapeutic interacts at cellular or molecular levels. Clear insights into MoA support safety, efficacy & potency assessments, guiding the design of relevant in-vitro & in-vivo models.

2. Organoid Models

Organoid and 3D models offer advanced platforms to investigate drug response in human-like systems. These cell-based tools improve the relevance of efficacy & safety studies. Organoid models are increasingly used to reduce dependency on traditional models & reduce costs while preserving scientific integrity & translational value.

3. Safety & Efficacy

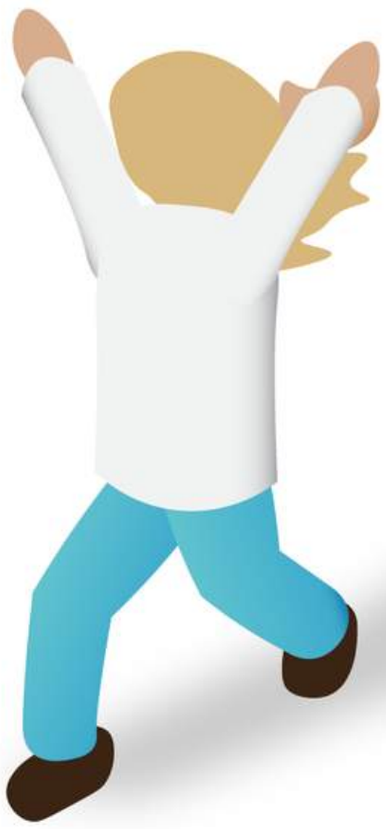
Preclinical studies assess the balance between safety & efficacy using accepted methodologies. The data generated can help to identify appropriate dosing ranges & detect potential side effects. Generating reliable data at this stage supports ethical progression into clinical trials as well as building regulatory confidence.

4. Material & Excipient safety

All materials & excipients used in production must be generally recognised as safe (GRAS). This includes testing for biological compatibility, purity & stability. Use of pharmacopeia materials can help to ensure suitable purity & safety, and are essential in both drug substance & drug production production in order to meet regulatory & quality expectations for product safety.

5. Pharmacokinetics (PK) & Pharmacodynamics (PD)

Pharmacokinetics (PK) and pharmacodynamics (PD) modelling provides insight into Absorption, Distribution, Metabolism & Excretion (ADME). PK/PD data supports dose selection & helps predict human response. These studies are key for mechanistic understanding & clinical trial design, aiding key decisions.



6. Early Positive Preclinical Data

Early indicators of efficacy, safety & MoA from preclinical studies guide the development strategy and attract investment. Robust early data builds confidence, supports regulatory engagement as well as informing stage-gate, Go/No-Go decisions. Clarity at an early stage helps align timelines & expectations for stakeholders.

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Strategic Planning & Due Diligence

1. Business Intelligence

Business intelligence involves the collection & analysis of market data, competition, licensing opportunites and regulatory landscapes. This information informs the strategic direction of the business. In addition, the intelligence underpins risk management & allows the business leaders to make confident, evidence-based decisions across development & investment timelines.

2. Market & Competition Analysis

Market & competition analysis evaluates unmet needs, emerging technologies & competitor positioning. Furthermore, it supports innovation & helps identify areas of strategic opportunity. A thorough understanding of competitive landscapes improves decisions around differentiation, timelines & commercial positioning.

3. Pricing Analysis

The analysis of pricing & value positioning of medicines help ensure a product is not mis-priced or poorly differentiated. Effective pricing strategies must be built on market evidence, payer expectations & benchmarking. This supports accurate valuation, risk mitigation & long term commercial viability.

4. Portfolio

The portfolio analysis considers the balance & alignment of assets across development stages & therapeutic areas. It involves strategic prioritisation based on scientific promise, market need as well as timing. If managed, the product portfolio supports the long-term vision of the business while allowing greater agility around evolving scientific & commercial risks.

5. Licensing

Licensing strategy requires understanding deal structures, risk-sharing models & asset valuation. Regardless of whether in-licensing or out-licensing, clear expression of an asset's value, its timelines & its data supports successful negotiations. Licensing assessments must align with strategic goals as well as include due diligence on competitor assets.

6. Clinical & Commercial Supply Agreements

Supply agreements support product availability through clinical trials and into the market. Planning ensures both appropriate scalability & continuity of supply. The agreement must be fair to both parties, include realistic timelines as well as risk mitigation throughout the development and launch phases. Ultimately the agreements must be a win-win for both parties to remain viable.

7. NPV Analysis

Net Present Value (NPV) analysis is commonly used to evaluate development opportunities. It integrates risk management, market forecasts, pricing & timelines to assess potential return. NPV modelling supports prioritisation, licensing discussions & investment planning across short, medium & long-term horizons.

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Clinical Development & Monitoring

1. Clinical Endpoints

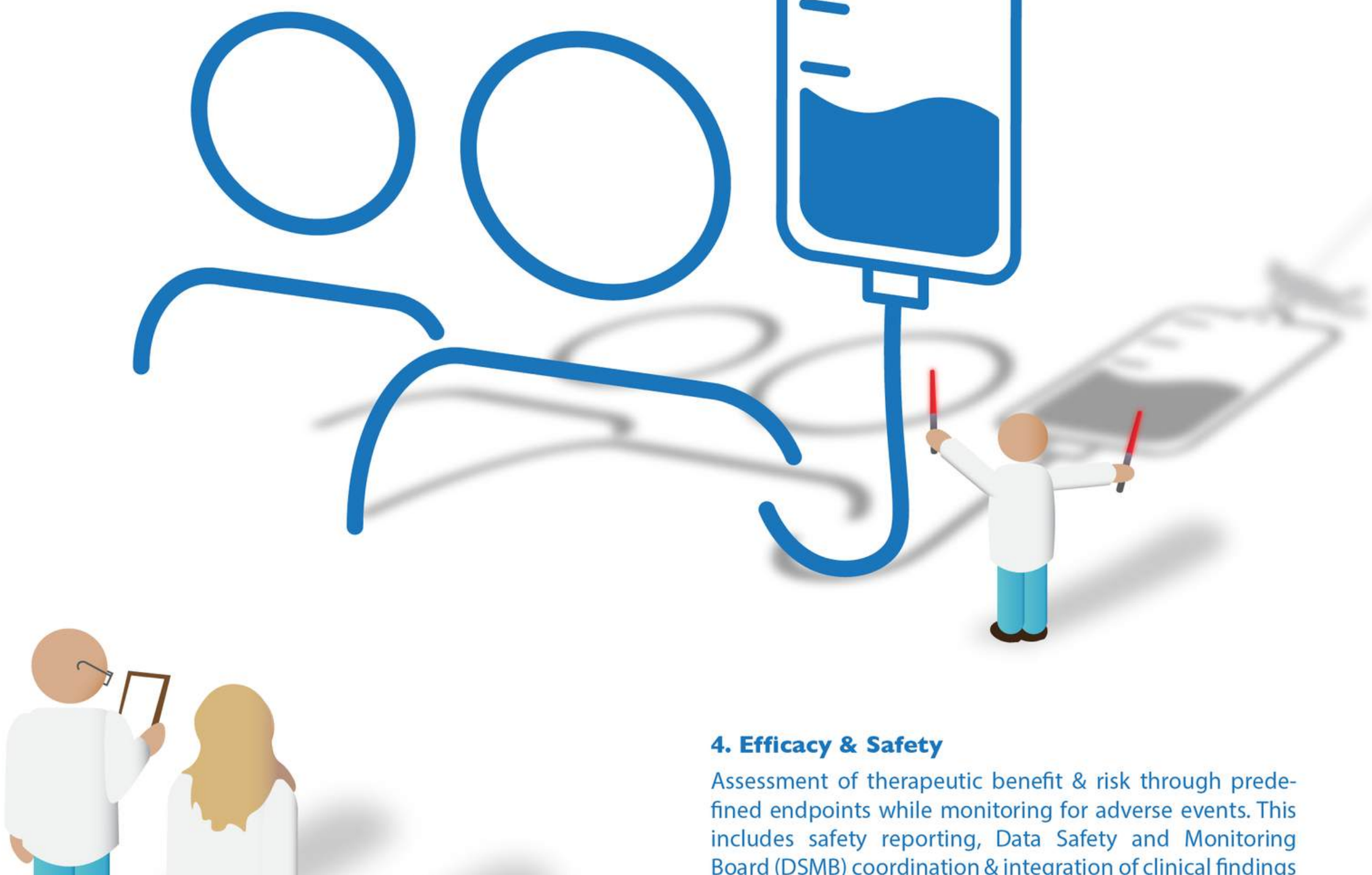
Definition, selection & analysis of 1o & 2o endpoints. This ensures endpoints are clinically meaningful, measurable & statistically valid. They must align with regulatory expectations with data capture across sites & patient populations.

2. Powered Trials

Trial design is grounded in statistical power calculations to detect meaningful differences. This involves population selection, sample size determination, randomisation strategy & minimising bias to ensure results are robust and interpretable to reach clinical conclusions.

3. Clinical Trials I, II & III

Design, initiation & oversight of clinical studies, progressing from early safety evaluation to large-scale efficacy testing. This includes clinical protocol development, briefing booklets, regulatory submissions, ethics approval, patient recruitment, dosing, monitoring & endpoint analysis.



4. Efficacy & Safety

Assessment of therapeutic benefit & risk through predefined endpoints while monitoring for adverse events. This includes safety reporting, Data Safety and Monitoring Board (DSMB) coordination & integration of clinical findings to support decision-making at each development stage.

5. Site Management & Monitoring

Engagement, training & oversight of clinical sites ensures protocol adherence, data accuracy & patient safety. This includes source data verification, compliance checks, query resolution & real-time monitoring to maintain study quality and integrity.

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