QUICK REFERENCE GUIDE

PHARMALEX
CONFIDENCE BEYOND COMPLIANCE

BIOSIMILAR DEVELOPMENT

HOW CAN PHARMALEX HELP?

QUALITY
TARGET PRODUCT PROFILE DEVELOPMENT

REGULATORY
STRATEGY DEVELOPMENT

EXPERT
CONSULTING/NONCLINICAL AND CLINICAL WRITING CONSULTANCY

AGENCY
MEETINGS

OBTAINING
INVESTIGATIONAL NEW DRUG (IND) OR INVESTIGATIONAL MEDICINAL PRODUCT DOSSIER (IMPD) AUTHORIZATION

PRESUBMISSION
ACTIVITIES

SCIENTIFIC
ADVICE BRIEFING PACKAGE/ IND/IMPD/BLA/MAA WRITING AND SUBMISSION

The path to biosimilar development can be a very complicated and lengthy journey, with strategy not aligning to overall plans, process characterizations not being sufficient and the quality target product profile may have not been considered effectively – all resulting in repeated work, loss of time and increased costs.

PharmaLex is a recognized leader for the provision of first-in-class strategic consultancy in Biosimilarity Assessment.

WATCH THE WEBINAR!

Zeb Younes
Director, Regulatory Affairs CMC

Over 17 years' experience in biopharmaceuticals and biosimilar development from proof of concept to commercialization.

Laboratory and desk experience in biosimilar development.

Follow link to see the full webinar: **https://bit.ly/2u8aJxx**

STEP-WISE APPROACH TO BIOSIMILAR DEVELOPMENT

Strategy	Quality: Reference Product Characterization	Quality: CMC Development	Quality: Similarity	Non-clinical Approach	Clinical Approach
Define **COMMERCIAL STRATEGY** with your teams Conduct **PATENT LITERATURE** searches **BUILD KNOWLEDGE** on reference product **FREEDOM** to Operate (FTO) analysis	**MAINTAIN QUALITY** at the same standard as new biological products **COUNTRY REGULATIONS** will dictate your reference product characterization Start building **QUALITY TARGET PRODUCT PROFILE (qTPP)** based on Critical Quality Attributes (CQAs) such as structure, purity and potency	**DEVELOP A ROBUST PROCESS** using high quality equipment **USE SENSITIVE METHODOLOGY** to identify potential degradation - identify potential differences to innovator product Process **CHARACTERIZATION** **GENERATE SIMILAR MATERIAL** based on CQAs	Establish **BIOSIMILARITY ACCEPTANCE CRITERIA** Pivotal **SIDE-BY-SIDE SIMILARITY ASSESSMENT** pre-agreed with regulators Comparing **CQAs** Comparative **FORCED DEGRADATION** studies	**ADDITIONAL NON-CLINICAL STUDIES** are based on any residual uncertainty aligned to regional requirements **IN-VITRO** functional testing **IN-VIVO –** only if required **RISK ASSESSMENT** to determine if there are any other uncertainties	**ABBREVIATED COMPARATIVE STUDIES** based on residual uncertainty **PK/PD, EFFICACY AND SAFETY** investigative studies **DESIGNS SHOULD ACCOUNT** for combined agency feedback

DID YOU KNOW...
If you impact safety this does not preclude biosimilarity if it is an improvement (as long as efficacy is not impacted)

TACKLING CHALLENGES

A. Avoid process changes late in development – approach any manufacturing changes with thorough risk assessments & repeat analytical comparability for quality

B. When a reference product has several indications choose an indication which is most likely to show a difference in Pharmacokinetics (PK) or Pharmacodynamics (PD)

C. If there are differences in similarity profile – characterise and justify why changes are not clinically meaningful

D. If there is a change in the manufacturing process a stepwise process can be followed:

I. Upfront risk assessment

II. Comparability for quality

III. Impact assessment with in vitro pharmacological assays

IV. Repeat PK/PD bioequivalence study if required

DID YOU KNOW...
The sunset clause means you must launch your product before the deadline set out by the regulator

TOP TIPS

- **Ensure a final fixed process is in place –** avoid process changes late in development as it results in added comparability and complicates documentation
- **Aim for high similarity to reference product –** demonstrating high similarities to the reference product will allow abbreviated pathways to be followed
- **Invest early –** early investment in literature & patent searches will prevent future issues that may arise
- **One package will not suit all –** understanding regional nuances early on will ensure your product package is aligned to regional requirements
- **Avoid unnecessary process improvements –** you are not aiming for innovation

We know that unplanned changes will occur during development, the acceptability of these will depend on how you assess acceptability of these and how the data is presented to regulators

ABOUT PHARMALEX

25+ YEARS
OF INDUSTRY EXPERIENCE

OVER 50%
OF OUR PROJECTS ARE GLOBAL

100% COVERAGE
OF ALL PRODUCT CATEGORIES INCLUDING MEDICINAL PRODUCTS, MEDICAL DEVICES, CONSUMER HEALTH AND VETERINARY

40+ HEALTH AUTHORITY MEETINGS PER YEAR WITH EMA/FDA/PMDA

95% OF OUR PROJECTS PASSED SUCCESSFULLY THROUGH DEVELOPMENT PHASE WITHOUT MAJOR FINDINGS