Integrated and STANDardized NGS workflows FOR Personalized Therapy

Coordinator: Kurt Zatloukal, M.D.
Diagnostic and Research Center for Molecular Biomedicine,
Medical University Graz, Austria

Basic slide set

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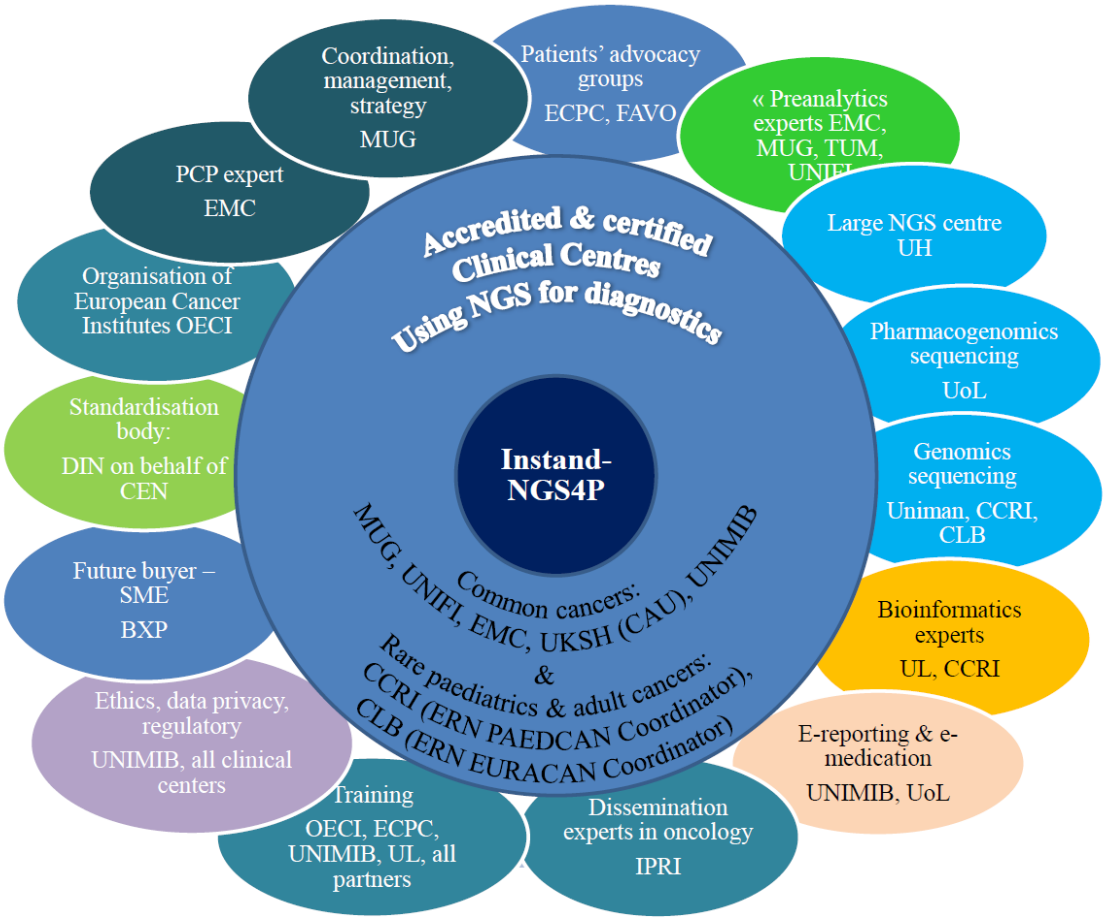
Participant No. (*)	Participant organisation name	Short name	Country
1 (Coordinator)	MEDIZINISCHE UNIVERSITAT GRAZ	MUG	AT
2	DIN DEUTSCHES INSTITUT FUER NORMUNG E.V.	DIN	DE
3	UNIVERSITA DEGLI STUDI DI FIRENZE	UNIFI	IT
4	ERASMUS UNIVERSITAIR MEDISCH CENTRUM ROTTERDAM	ERASMUS	NL
5	ST. ANNA KINDERKREBSFORSCHUNG - CHILDREN'S CANCER RESEARCH INSTITUTE	CCRI	AT
6	UNIVERSITA' DEGLI STUDI DI MILANO-BICOCCA	UNIMIB	IT
7	UNIVERSITY OF LIVERPOOL (INSTITUTE OF TRANSLATIONAL MEDICINE)	UoL	UK
8	EUROPEAN CANCER PATIENT COALITION	ECPC	BE
9	BIOXPEDIA A/S	BXP	DK
10	CHRISTIAN-ALBRECHTS-UNIVERSITAET ZU KIEL (THE INSTITUTE OF CLINICAL MOLECULAR BIOLOGY)	CAU	DE
11	FEDERAZIONE ITALIANA DELLE ASSOCIAZIONI DI VOLONTARIATO IN ONCOLOGIA	FAVO	IT
12	ORGANISATION OF EUROPEAN CANCER INSTITUTES	OECI	BE
13	THE UNIVERSITY OF MANCHESTER (MANCHESTER CENTRE FOR GENOMIC MEDICINE)	UM MCGM	UK
14	INTERNATIONAL PREVENTION RESEARCH INSTITUT-IPRI MANAGEMENT	IPRI	FR
15	UNIVERSITY OF LJUBLJANA, FACULTY OF MEDICINE, LJUBLJANA	UL	SL
16	TECHNICAL UNIVERSITY OF MUNICH	TUM	DE
17	CENTRE ANTICANCEREUX LEON BERARD	CLB	FR
18	UNIVERSITY OF HELSINKI (FINLAND- INSTITUTE FOR MOLECULAR MEDICINE)	Uh-FIMM	FI



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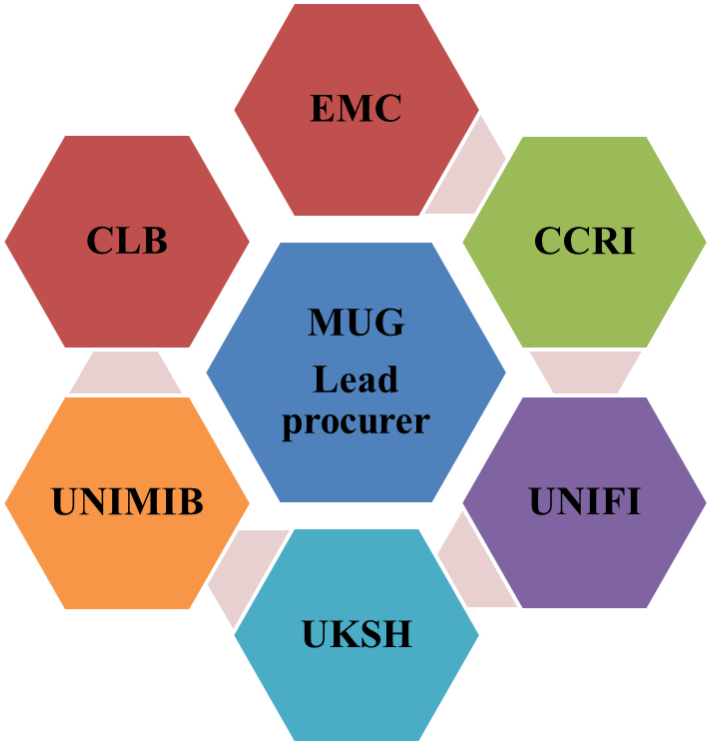
The buyers group



Overall objectives:

A patient and clinical need-driven approach

- Increasing the benefit for patients from NGS by combining cancer gene testing with pharmacogenetics
- Application scenario: common and rare cancers; relevance for other diseases
- Positive health-economic effect

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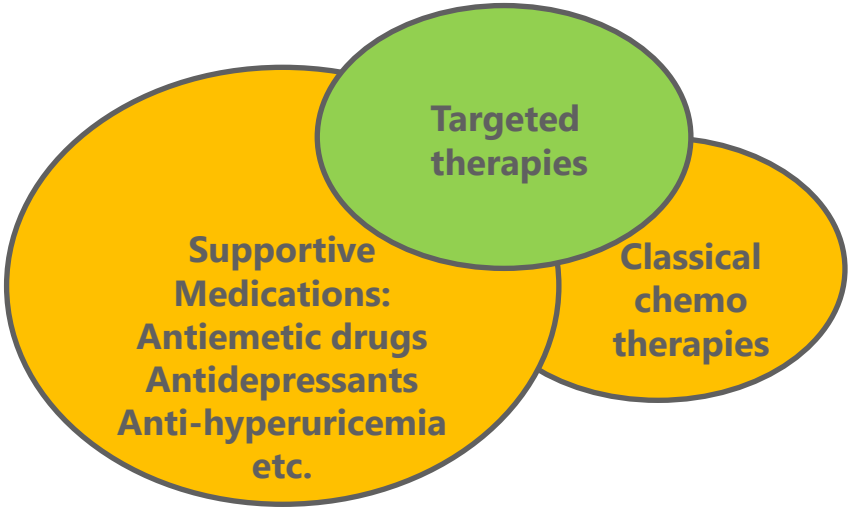
A holistic patient-centered pharmacogenomics approach



- To enable best therapeutic option for a specific patient including targeted therapies and supporting medications
- To take advantage of established reibursement systems for primary diagnosis

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Overall objectives:

- Bringing NGS closer to bedside by providing integrated information from NGS and e-medication in proper presentation to medical doctors for supporting therapy decision making at bedside

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Presenting NGS results to clinicians and patients:

- E-medication provides decision support for drug selection considering drug interactions
- E-medication is already integrated in EMR
- Integration of reports from cancer gene testing, pharmacogenomics testing and e-medication provides key support for therapy decision making at bedside

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Overall objectives:

Achieving regulatory compliance

- Integrated and standardized workflow from patient (sample) to patient (therapy decision) for improved performance and compliance with regulatory requirements

- Modularity of the workflow to address needs of rare diseases and to enable use of „lab-developed tests“

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- Scientific validity
- Analytical performance
- Clinical performance

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TABLE 1 Representative next generation sequencing-based gene panel tests

Panel test	No. of targeted genes	Enrichment approach	Tumor mutation burden	FDA approval	PMDA approval	References
Oncomine Dx Target Test	23 genes	Amplicon	–	Yes	Yes	https://assets.thermofisher.com/TFS-Assets/LSG/brochures/oncomine-dx-target-test-flyer.pdf
MSK-IMPACT	468 genes	Capture	Yes	Yes	–	36
FoundationOne CDx	324 genes	Capture	Yes	Yes	–	https://assets.ctfassets.net/vhribv12lmne/6Rt6csmCPuaguuqmgi2iY8/e3a9b0456e-d71a55d2e4480374695d95/FoundationOne_CDx.pdf
NCC Oncopanel	114 genes	Capture	–	–	–	https://www.mhlw.go.jp/file/05-Shingikai-10901000-Kenkoukyoku-Soumuka/0000179757.pdf
Todai OncoPanel	464 genes	Capture	–	–	–	http://todaioncopanel.umin.jp/#sec01
CANCERPLEX	435 genes	Capture	Yes	–	–	56
OncoPrime	223 genes	Unknown	–	–	–	73
PleSSision	160 genes	Unknown	–	–	–	http://www.hosp.keio.ac.jp/st/cancer/info/20180529_2.pdf
OmniSeq Advance	144 genes	Amplicon	Yes	–	–	74
P5 report	52 genes	Unknown	–	–	–	http://www.okayama-u.ac.jp/user/hos/koganzai/P5report/

–, No data; PMDA, Pharmaceuticals and Medical Devices Agency (Japan).

from Nagahashi et al., 2018

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Article 5

Placing on the market and putting into service

5. With the exception of the relevant **general safety and performance requirements set out in Annex I**, the requirements of this Regulation shall not apply to devices **manufactured and used only within health institutions** established in the Union, provided that all of the following conditions are met:

(a) the devices are not transferred to another legal entity;

(b) manufacture and use of the devices occur under appropriate quality management systems;

(c) the laboratory of the health institution is **compliant with standard EN ISO 15189** or where applicable national provisions, including national provisions regarding accreditation;

(d) the health institution justifies in its documentation that the target patient group's **specific needs cannot be met, or cannot be met at the appropriate level of performance by an equivalent device available on the market**;

(e) the health institution provides information upon request on the use of such devices to its competent authority, which shall include a justification of their manufacturing, modification and use;

Benefits of the standardized and integrated workflow

- Requirement for ISO Standards and IVDR
- Integrates solutions of different vendors (large companies and SMEs)
- Reduces work load for lab-developed tests

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Meeting ethical, legal and societal issues

Ethical and legal requirements

- for the project (WP8)
- for use of the workflow in health care after the project (WP6)

Societal issues

- Active involvement of patient advocacy groups
- Interaction with key medical societies, regulators and payers
- Dissemination to the public
- Education and training

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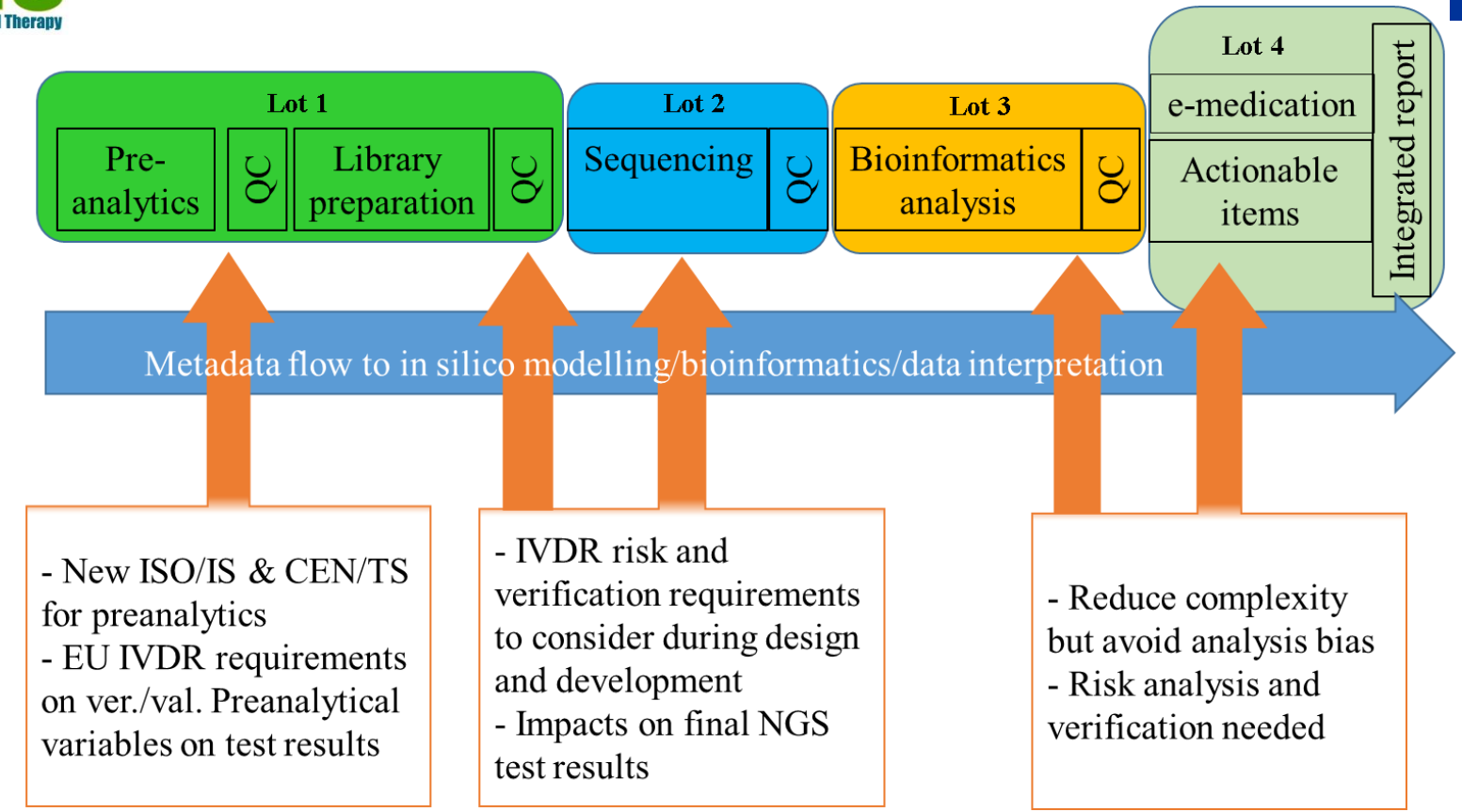

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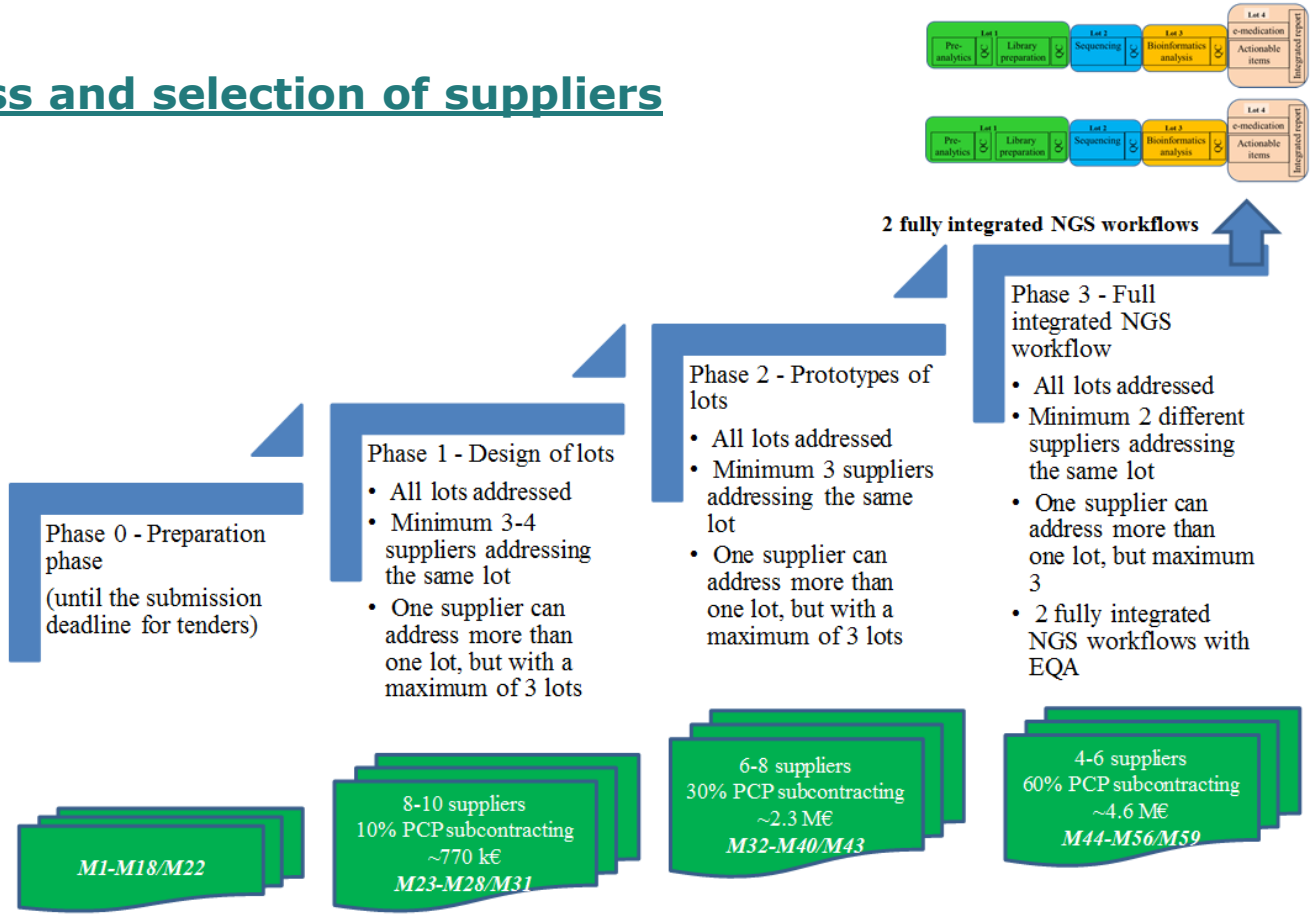
PCP process and selection of suppliers



Challenges and risks

- Attracting leading solution providers (companies)
- Proper specification of workflow components
- Realistic expectations

Opportunities

- Very important initiative to advance precision medicine and to improve disease outcomes of patients with cancer
- Synergies with other initiatives and projects

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Looking forward to collaboration
and
thank you for your attention!

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