

Online Supplementary file 1 – Search strategy

Pubmed

ONCOLOGY – 1/04/2020		
No.	Query	Results
#17	#10 AND #6 AND #1	501
#10	#8 OR #9	57367
#9	Search: Drug Evaluation, Preclinical [Majr] "drug evaluation, preclinical"[MeSH Major Topic]	20738
#8	Search: "drug development"[tiab] OR "drug developments"[tiab] OR "drug response"[tiab] OR "Drug evaluation"[tiab] OR "Drug evaluated"[tiab] OR "drug response assay"[tiab] OR "drug sensitivity screening"[tiab])	37719
#7	Search: Cancer*[tiab] OR carcinoma*[tiab] OR tumor*[tiab] OR tumour*[tiab] OR oncolo*[tiab] OR leukemia[tiab] OR lymphoma[tiab] OR sarcoma[tiab] OR "immune oncology" [tiab] OR "immunooncology" [tiab] OR Neoplasms [Majr])	4006907
#6	Search: #4 OR #5	488511
#5	Search: "Biomarkers"[Majr] OR "Precision Medicine"[Majr] "Biomarkers"[MeSH Major Topic] OR "Precision Medicine"[MeSH Major Topic]	260230
#4	Search: "stratified medicine"[tiab] OR biomarker*[tiab] OR "precision medicine"[tiab] OR "personalized medicine"[tiab] OR "personalised medicine"[tiab] OR "individualized medicine"[tiab] OR "individualised medicine"[tiab] OR "individualized therapy"[tiab] OR "individualised therapy"[tiab] OR "patient stratification"[tiab] OR "patient specific modeling"[tiab] OR "personalized clinical decision making"[tiab] OR "personalised clinical decision making"[tiab] OR "personalized clinical decision-making"[tiab] OR "prediction of response"[tiab]	279420
#1	Search: "cellular model"[tiab] OR "cellular models"[tiab] OR "Patient specific modeling"[tiab] OR organoid*[tiab] OR "in silico"[tiab] OR "PDX models"[tiab] OR "Patient derived xenografts"[tiab] OR "preclinical PDX"[tiab] OR "humanised mouse model"[tiab] OR "preclinical models"[tiab] OR "preclinical model"[tiab] OR "pre clinical stage"[tiab] OR "pre clinical testing"[tiab] OR "Translational medical research"[tiab] OR "disease model"[tiab] OR "disease models"[tiab] OR "translational models"[tiab] OR "translational model"[tiab] OR "animal model"[tiab] OR xenograft*[tiab] OR "animal models"[tiab]	
BRAIN DISORDERS- 23/03/2020		
No.	Query	Results
#19	Search #7 AND #10 AND #13 AND #16 Sort by: PublicationDate Filters: Publication date from 2005/01/01	678
#18	Search #7 AND #10 AND #13 AND #16	714
#16	Search #14 OR #15	1266325
#15	Search ("mental disorders" [Mesh] OR "Neurocognitive Disorders" [Mesh] OR "Neurodevelopmental Disorders" [Mesh] OR "Psychotic Disorders" [Mesh]))	1219103
#14	Search ("Psychiatric diseases" OR "mental disorders" OR "psychiatric disease" OR "psychiatric disorders" OR "psychiatric disorder" OR mental disorder" OR "mental illness" OR "depression OR "bipolar disorder" OR bipolar disorders" OR bipolarism OR anxiety OR "personality disorders" OR "psychotic disorders" OR schizophrenia OR "eating disorders" OR "trauma related disorders" OR "post traumatic stress disorder" OR "post traumatic stress disorders" OR "substance abuse disorders" OR "Asperger syndrome" OR Autism OR "Delirium tremens" OR Epilep* OR "Hallucinogen related disorders" OR Hysteria OR "Minor depressive disorder" "Minor depressive disorders" OR "Major depressive disorder" OR "Major depressive disorders" OR "Obsessive compulsive disorder" OR "Obsessive compulsive disorders" OR "Obsessive compulsive personality disorder" OR "Obsessive compulsive personality disorders" OR "Schizoaffective disorder" OR "Schizoaffective disorders" OR "Schizoid personality disorder"OR "Schizoid personality disorders" OR Alzheimer OR dementia)	219180
#13	Search #11 OR #12	5947216

#12	Search drug therapy [Subheading]	2188351
#11	Search (“therapy selection” “therapeutic selection” OR “treatment” OR “patient allocation” OR “drug therapy” OR “trial success rate” OR “therapy selected” OR “therapeutic selected”)	5947216
#10	Search #8 OR #9	610949
#9	Search (Search (“Biomarkers”[Mesh] OR “Precision Medicine”[Mesh]))	10235
#8	Search (“stratified medicine” OR biomarker* OR “precision medicine” OR “personalized medicine” OR “personalised medicine” OR “individualized medicine” OR “individualised medicine” OR “individualized therapy” OR “individualised therapy” OR “patient stratification” OR “patient specific modeling” OR “personalized clinical decision making” OR “personalised clinical decision making” OR “personalized clinical decision-making” OR “prediction of response”)	607940
#7	Search #5 OR #6	2760163
#6	Search ((Drug Evaluation, Preclinical [Mesh] OR Models, Animal [Mesh] OR Organoids [Mesh] OR In Vitro Techniques [Mesh] OR Translational Medical Research [Mesh] OR Disease models, animal [Mesh] OR Patient-specific modeling [Mesh] OR Cells, cultured [Mesh]))	2739423
#5	Search (“cellular model” OR “cellular models” OR “drug development” OR “drug developments” OR “drug response” OR “Drug evaluation” OR “Drug evaluated” OR “Patient specific modeling” OR organoid* OR ‘in silico’ OR ‘drug response assay’ OR “drug sensitivity screening” OR “PDX models” OR “Patient derived xenografts” OR “preclinical PDX” OR “humanised mouse model” OR “preclinical models” OR “preclinical model” OR “pre clinical stage” OR “pre clinical testing” OR “Translational medical research” OR “disease model” OR “disease models” OR “translational models” OR “translational model” OR “animal model” OR “animal models” OR xenograft*)	80945

Embase

ONCOLOGY – 1/04/2020		
No.	Query	Results
#6	#1 AND #2 AND #3 AND #4 AND [2005-2020]/py	798
#5	#1 AND #2 AND #3 AND #4	801
#4	'drug development':ti,ab OR 'drug developments':ti,ab OR 'drug response':ti,ab OR 'drug evaluation':ti,ab OR 'drug evaluated':ti,ab OR 'drug response assay':ti,ab OR 'drug sensitivity screening':ti,ab OR 'preclinical study'/exp/mj	56857
#3	cancer*:ti,ab OR carcinoma*:ti,ab OR tumor*:ti,ab OR tumour*:ti,ab OR oncolo*:ti,ab OR leukemia:ti,ab OR lymphoma:ti,ab OR sarcoma:ti,ab OR 'immune oncology':ti,ab OR 'immunooncology':ti,ab OR 'neoplasm'/exp/mj	5240665
#2	'stratified medicine':ti,ab OR biomarker*:ti,ab OR 'precision medicine':ti,ab OR 'personalized medicine':ti,ab OR 'personalised medicine':ti,ab OR 'individualized medicine':ti,ab OR 'individualised medicine':ti,ab OR 'individualized therapy':ti,ab OR 'individualised therapy':ti,ab OR 'patient stratification':ti,ab OR 'patient specific modeling':ti,ab OR 'personalised clinical decision making':ti,ab OR 'personalized clinical decision making':ti,ab OR 'prediction of response':ti,ab OR 'biological marker'/exp/mj OR 'personalized medicine'/exp/mj	435405
#1	'cellular model':ti,ab OR 'cellular models':ti,ab OR 'patient specific modeling':ti,ab OR organoid*:ti,ab OR 'in silico':ti,ab OR 'pdx models':ti,ab OR 'patient derived xenografts':ti,ab OR 'preclinical pdx':ti,ab OR 'humanised mouse model':ti,ab OR 'preclinical models':ti,ab OR 'preclinical model':ti,ab OR 'pre clinical stage':ti,ab OR 'pre clinical testing':ti,ab OR 'translational medical research':ti,ab OR 'disease model':ti,ab OR 'disease models':ti,ab OR 'translational models':ti,ab OR 'translational model':ti,ab OR 'animal model':ti,ab OR xenograft*:ti,ab OR 'animal models':ti,ab	427043
BRAIN DISORDERS – 24/03/2020		
#15	#13 AND #14	680
#14	[embase]/lim NOT [medline]/lim	9583919
#13	#3 AND #6 AND #9 AND #12	1133
#12	#10 OR #11	2126059

#11	'disorders of higher cerebral function'/exp/mj OR 'mental disease'/exp/mj OR 'psychosis'/exp/mj	1448175
#10	'psychiatric disease*':ti,ab OR 'mental disorder*':ti,ab OR 'psychiatric disorder*':ti,ab OR 'mental illness':ti,ab OR 'depression':ti,ab OR 'bipolar disorder':ti,ab OR 'bipolarism':ti,ab OR 'anxiety':ti,ab OR 'personality disorder*':ti,ab OR 'psychotic disorder*':ti,ab OR 'schizophreni*':ti,ab OR 'eating disorder*':ti,ab OR 'trauma related disorder*':ti,ab OR 'post traumatic stress disorder*':ti,ab OR 'substance abuse disorder*':ti,ab OR 'asperger syndrome':ti,ab OR 'autism':ti,ab OR 'delirium tremens':ti,ab OR 'epilep*':ti,ab OR 'hallucinogen related disorder*':ti,ab OR 'hysteria':ti,ab OR 'minor depressive disorder*':ti,ab OR 'major depressive disorder*':ti,ab OR 'obsessive compulsive disorder*':ti,ab OR 'obsessive compulsive personality disorder*':ti,ab OR 'schizoaffective disorder*':ti,ab OR 'schizoid personality disorder*':ti,ab OR 'alzheimer':ti,ab OR 'dementia':ti,ab	1372445
#9	#7 OR #8	6083613
#8	'drug therapy'/mj	243267
#7	'therapy selection':ti,ab OR 'therapeutic selection':ti,ab OR 'treatment':ti,ab OR 'patient allocation':ti,ab OR 'drug therapy':ti,ab OR 'trial success rate':ti,ab OR 'therapy selected':ti,ab OR 'therapeutic selected':ti,ab	5925767
#6	#4 OR #5	433005
#5	'biological marker'/exp/mj OR 'personalized medicine'/exp/mj	93445
#4	'stratified medicine':ti,ab OR 'biomarker*':ti,ab OR 'precision medicine':ti,ab OR 'personalized medicine':ti,ab OR 'personalised medicine':ti,ab OR 'individualized medicine':ti,ab OR 'individualised medicine':ti,ab OR 'individualized therapy':ti,ab OR 'individualised therapy':ti,ab OR 'patient stratification':ti,ab OR 'patient specific modeling':ti,ab OR 'personalized clinical decision making':ti,ab OR 'personalised clinical decision making':ti,ab OR 'prediction of response':ti,ab	412990
#3	#1 OR #2	680024
#2	'animal model'/exp/mj OR 'organoid'/exp/mj OR 'in vitro study'/exp/mj OR 'translational research'/exp/mj OR 'disease model'/exp/mj OR 'cell culture'/exp/mj OR 'preclinical study'/exp/mj	236722
#1	'cellular model*':ti,ab OR 'drug development*':ti,ab OR 'drug response':ti,ab OR 'drug evaluation':ti,ab OR 'drug evaluated':ti,ab OR 'patient specific modeling':ti,ab OR 'organoid*':ti,ab OR 'in silico':ti,ab OR 'drug response assay':ti,ab OR 'drug sensitivity screening':ti,ab OR 'pdx models':ti,ab OR 'patient derived xenografts':ti,ab OR 'preclinical pdx':ti,ab OR 'humanised mouse model':ti,ab OR 'preclinical model*':ti,ab OR 'pre clinical stage' OR 'pre clinical testing':ti,ab OR 'translational medical research':ti,ab OR 'disease model*':ti,ab OR 'translational model*':ti,ab OR 'animal model*':ti,ab OR 'xenograft*':ti,ab	474356

Web of Science

ONCOLOGY – 1/04/2020		
No.	Query	Results
#6	#4 AND #3 AND #2 AND #1 Refined by: PUBLICATION YEARS: (2020 OR 2015 OR 2010 OR 2005 OR 2019 OR 2014 OR 2009 OR 2018 OR 2013 OR 2008 OR 2017 OR 2012 OR 2007 OR 2016 OR 2011 OR 2006) Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years	351
#5	#4 AND #3 AND #2 AND #1 Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years	358
#4	TOPIC: ("drug development" OR "drug developments" OR "drug response" OR "Drug evaluation" OR "Drug evaluated" OR "drug response assay" OR "drug sensitivity screening") Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years	42100
#3	TOPIC: (Cancer* OR carcinoma* OR tumor* OR tumour* OR oncolo* OR leukemia OR lymphoma OR sarcoma OR "immune oncology" OR "immunooncology") Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years	3895924

#2	TOPIC: ("stratified medicine" OR biomarker* OR "precision medicine" OR "personalized medicine" OR "personalised medicine" OR "individualized medicine" OR "individualised medicine" OR "individualized therapy" OR "individualised therapy" OR "patient stratification" OR "patient specific modeling" OR "personalized clinical decision making" OR "personalised clinical decision making" OR "personalized clinical decision making" OR "prediction of response") Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years	357026
#1	TOPIC: ("cellular model" OR "cellular models" OR "Patient specific modeling" OR organoid* OR "in silico" OR "PDX models" OR "Patient derived xenografts" OR "preclinical PDX" OR "humanised mouse model" OR "preclinical models" OR "preclinical model" OR "pre clinical stage" OR "pre clinical testing" OR "Translational medical research" OR "disease model" OR "disease models" OR "translational models" OR "translational model" OR "animal model" OR xenograft* OR "animal models") Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years	353567

BRAIN DISORDERS- 24/03/2020

No.	Query	Results
# 12	#11 OR #6 Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years	5
# 11	#10 AND #9 AND #8 AND #7 Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years	4
# 10	TOPIC: ('mental disease' OR 'disorders of higher cerebral function' OR 'mental disease' OR 'psychosis') Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years	124,763
# 9	TOPIC: ('drug therapy') Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years	373,565
# 8	TOPIC: ('biological marker' OR 'personalized medicine') Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years	66,459
# 7	TOPIC: ('animal model*' OR organoid* OR 'in vitro study' OR 'translational research' OR 'disease model' OR 'cell culture' OR 'preclinical study') Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years	2,182,545
# 6	#5 AND #4 AND #3 AND #2 AND #1 Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years	1
# 5	TITLE: ("Psychiatric disease*" OR "mental disorder*" OR "psychiatric disorder*" OR "mental illness" OR depression OR "bipolar disorder" OR bipolarism OR anxiety OR "personality disorder*" OR "psychotic disorder*" OR schizophrenia* OR "eating disorder*" OR "trauma related disorder*" OR "post traumatic stress disorder*" OR "substance abuse disorder*" OR "Asperger syndrome" OR Autism OR "Delirium tremens" OR Epilep* OR "Hallucinogen related disorder*" OR Hysteria OR "Minor depressive disorder*" OR "Major depressive disorder*" OR "Obsessive compulsive disorder*" OR "Obsessive compulsive personality disorder*" OR "Schizoaffective	632,141

	disorder*" OR "Schizoid personality disorder*" OR Alzheimer OR dementia) Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years	
# 4	TITLE: ("Psychiatric disease*" OR "mental disorder*" OR "psychiatric disorder*" OR "mental illness" OR depression OR "bipolar disorder" OR bipolarism OR anxiety OR "personality disorder*" OR "psychotic disorder*" OR schizophreni* OR "eating disorder*" OR "trauma related disorder*" OR "post traumatic stress disorder*" OR "substance abuse disorder*" OR "Asperger syndrome" OR Autism OR "Delirium tremens" OR Epilep* OR "Hallucinogen related disorder*" OR Hysteria OR "Minor depressive disorder*" OR "Major depressive disorder*" OR "Obsessive compulsive disorder*" OR "Obsessive compulsive personality disorder*" OR "Schizoffective disorder*" OR "Schizoid personality disorder*" OR Alzheimer OR dementia) Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years	632,141
# 3	TITLE: ("therapy selection" OR "therapeutic selection" OR "treatment" OR "patient allocation": ti,ab OR "drug therapy" OR "trial success rate" OR "therapy selected" OR "therapeutic selected") Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years	1,122,829
# 2	TITLE: ("stratified medicine" OR biomarker* OR "precision medicine" OR "personalized medicine" OR "personalised medicine" OR "individualized medicine" OR "individualised medicine" OR "individualized therapy" OR "individualised therapy" OR "patient stratification" OR "patient specific modeling" OR "personalized clinical decision making" OR "personalised clinical decision making" OR "prediction of response") Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years	107,628
# 1	TITLE: ("cellular model*" OR "drug development*" OR "drug response" OR "Drug evaluation" OR "Drug evaluated" OR "Patient specific modeling" OR organoid* OR "in silico" OR "drug response assay" OR "drug sensitivity screening" OR "PDX models" OR "Patient derived xenografts" OR "preclinical PDX" OR "humanised mouse model" OR "preclinical model*" OR "pre clinical stage" OR "pre clinical testing" OR "Translational medical research" OR "disease model*" OR "translational model*" OR "animal model*" OR xenograft*) Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years	78,144

Date of search	Source	Url
11/05/2020	EUROPEAN ALLIANCE FOR PERSONALIZED MEDICINE	https://www.euapm.eu
01/2021	International register of preclinical trial protocols	www.preclinicaltrials.eu
01/2021	Animal Study Registry	www.animalstudyregistry.org
01/2021	Safe, Innovative and Accessible Medicines: a Renewed Vision for the Pharmaceutical Sector	https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0666:FIN:en:PDF
01/2021	Gyoerffi M. ENVIRONMENT, PUBLIC HEALTH AND FOOD	https://www.europarl.europa.eu/RegData/etudes/BRIE/2017/614190/IPOL_BRI(2017)614190_EN.pdf

	SAFETY (ENVI) Briefing Personalised Medicine-Current Status KEY FINDINGS.	
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Grey Literature

Online Supplementary file 2 – Data extraction form

ONCOLOGY:

Authors		
Title		
Journal	Year of Publication	
Country of origin		
Date of publication		
DOI		
Language	<ul style="list-style-type: none"> • English • French • German • Spanish • Italian 	
Type of publication	<ul style="list-style-type: none"> • Research article • Systematic review • Review • Commentary/ Editorial • Book chapter 	
Disease	<ul style="list-style-type: none"> • Type of cancer • Other than oncology 	
Topic	Short description	
Type of model	Animal	<ul style="list-style-type: none"> • Animal species • Type of animal model • Origin of tumour • Immune status
	Cellular model	<ul style="list-style-type: none"> • Type of cellular model • Origin of cells
	Organoid model	Origin of organoid
	In silico models	<ul style="list-style-type: none"> • Type of <i>in silico</i> model • Type and source of data
Advantages	Advantages of the preclinical model	
Disadvantages	Disadvantages of the preclinical model	
Validity	Has the model been validated (external and internal validation)	
Personalised medicine	Consideration related to personalised medicine	

BRAIN DISORDERS:

Title	
Year	Year of Publication
Authors	
Journal	
DOI	
Language	<ul style="list-style-type: none">• English• French• German• Spanish• Italian
Type of paper	<ul style="list-style-type: none">• Research article• Review• Congress report / abstract• Commentary/ Editorial• Book chapter
Disease	<ul style="list-style-type: none">• Psychiatric disorders• Trauma-related disorders• Substance use disorders• Anxiety disorders• Neurodegenerative disorders (Alzheimer's disease, Parkinson's disease, Huntington's disease)• Neurodevelopmental disorders (Autism spectrum diseases)• Others
Type of model	<ul style="list-style-type: none">• Animal – rodent• Animal – others• Cellular model• Organoids• <i>In silico</i> models
Pro	<ul style="list-style-type: none">• Advantages of the preclinical model
Cons	<ul style="list-style-type: none">• Disadvantages of the preclinical model
Face validity	Does the model resemble the human disease condition on a superficial level, for example, biochemistry or symptomatology?
Predictive validity	Can the model successfully discriminate between successful and unsuccessful treatments for the human disease condition?
Personalised medicine	Consideration related to personalised medicine