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literatury

Problematika zveřejňování různorodých vědeckých výstupů v repozitářích šedé literatury z pohledu biomedicínského inženýrství

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Challenges in Providing Unpublished Research Data in Medicine to Grey Literature Repositories

Pavla Francová, Stephanie Krueger



National Library of Technology in Prague

8th Conference on Grey Literature and Repositories

Prague, 21st October 2015

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Scientific Project Overview

210 mm



- Better visualization => **Magnetization Transfer Contrast**
- From **gelatin** over phantom with **pig lungs** to **human** healthy volunteers => open for clinical study...
(any volunteers? Seriously! 😊)
- **Measuring software** -> **measuring protocol** -> **data evaluation SW**

Goals Overview

210 mm

- Authors in **case study combine the perspectives** of active **researcher** and **information scientist**
- **Illustrate the current status** of the accessibility of scholarly outputs
- **Describe the difficulties** in searching for topic-related grey literature using a real research example
- **Provide examples** of unindexed dark scientific data
- Briefly **define what might attract** more **scientists to share** their dark data in grey literature depositories

Keywords and Queries

210 mm

Medical Subject Headings (MeSH® Vocabulary)

Variant	Queries
A	"Magnetic Resonance Imaging" AND "Lung"
B	"Magnetization Transfer" OR "Magnetization Transfer Contrast"
C	"Magnetic Resonance Imaging" AND "Lung" AND "Magnetization Transfer"
V1	"Magnetic Resonance Imaging" AND "Lung" AND "Magnetization Transfer" OR "Magnetization Transfer Contrast"
V2	"Magnetic Resonance Imaging" AND "Lung" AND "Magnetization Transfer" OR "Magnetization Transfer Contrast" OR "Magnetization Transfer Imaging"
V3	"Magnetic Resonance Imaging" AND "Lung" AND "Magnetization Transfer" OR "Magnetization Transfer Contrast" OR "Magnetization Transfer Imaging" OR "Magnetization Transfer Contrast Imaging"

Bibliographic Databases

210 mm

<u>Resource Used</u>	<u>II</u>	<u>Query</u>	A	B	C	V1	V2	V3
PubMED			8 275	2 213	17 [1-3]	225	617	617
SCOPUS			25 231	3 002	12 [1-4]	12	12	12
Web of Science - title			351	1 398	1 [3]	147	395	395
Web of Science - topic			3 293	3 462	10 [1-3,5]	458	1 161	1 161

[1] ARNOLD J.F.T. et al. **Potential of magnetization transfer MRI for target volume definition in patients with non-small-cell lung cancer.** JMIR, 2008.

[2] JAKOB P.M. et al. **Magnetization transfer short inversion time inversion recovery enhanced 1H MRI of the human lung.** Magma: MAGMA, 2002.

[3] KUZO R.S. et al. **Magnetization Transfer Magnetic Resonance Imaging of Parenchymal Lung Disease.** Invest. Radiol., 1995.

[4] NIEMI P.T. et al. **Tissue specificity of low-field-strength magnetization transfer contrast imaging.** JMIR, 1992.

[5] ARNOLD J.F. et al. **Could Functional MRI Improve Radiation Therapy Planning in Non-Small Cell Lung Cancer?** IJROBP, 2005.

Search

Alerts








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TITLE-ABS-KEY ("Magnetic Resonance Imaging" AND "Lung" AND "Magnetization Transfer" OR "Magnetization Transfer Contrast")

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- 2008 (1)
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- 2007 (1)

Author Name

-
- Jakob, P.M. (3)
-
-
- Hebestreit, H. (2)
-
-
- Haase, A. (2)
-
-
- Hahn, D. (2)
-
-
- Eifeber, M. (2)

<input type="checkbox"/> 1	Magnetization transfer magnetic resonance imaging of parenchymal lung disease	Kuzo, R.S., Kormano, M.J., Lipton, M.J.	1995	Investigative Radiology	4
	  View at Publisher				
<input type="checkbox"/> 2	Tissue specificity of low-field-strength magnetization transfer contrast imaging.	Niemi, P.T., Komu, M.E., Koskinen, S.K.	1992	Journal of magnetic resonance imaging : JMIR	29
	  View at Publisher				
<input type="checkbox"/> 3	Magnetization transfer short inversion time inversion recovery enhanced 1H MRI of the human lung.	Jakob, P.M., Wang, T., Schultz, G., (...), Hahn, D., Haase, A.	2002	Magma (New York, N.Y.)	5
	  View at Publisher				
<input type="checkbox"/> 4	Potential of magnetization transfer MRI for target volume definition in patients with non-small-cell lung cancer	Arnold, J.F.T., Kotas, M., Pyzalski, R.W., (...), Flentje, M., Jakob, P.M.	2008	Journal of Magnetic Resonance Imaging	3
	  View at Publisher				
<input type="checkbox"/> 5	Magnetization transfer short inversion time inversion recovery enhanced 1H MRI of the human lung	Jakob, P.M., Wang, T., Schultz, G., (...), Hahn, D., Haase, A.	2002	Magnetic Resonance Materials in Physics, Biology and Medicine	5

[1] ARNOLD J.F.T. et al. **Potential of magnetization transfer MRI for target volume definition in patients with non-small-cell lung cancer.** JMIR, 2008.

[2] JAKOB P.M. et al. **Magnetization transfer short inversion time inversion recovery enhanced 1H MRI of the human lung.** Magma: MAGMA, 2002.

[3] KUZUO R.S. et al. **Magnetization Transfer Magnetic Resonance Imaging of Parenchymal Lung Disease.** Invest. Radiol., 1995.

[4] NIEMI P.T. et al. **Tissue specificity of low-field-strength magnetization transfer contrast imaging.** JMIR, 1992.

[5] ARNOLD J.F. et al. **Could Functional MRI Improve Radiation Therapy Planning in Non-Small Cell Lung Cancer?** IJROBP, 2005.

Full-text Databases

210 mm

<u>Resource Used</u>	<u>Query</u>	A	B	C	V1	V2	V3
EBSCOhost		2 235	834	4	44	208	67 371
ScienceDirect		42 465	5 860	300	300	300	300
SpringerLink Biomedical Sciences		5 872	815	83	156	322	322
SpringerLink Medicine		26 778	1 989	387	681	1 016	1 016
SpringerLink Public Health		1 215	138	45	65	76	76
Wiley Online Library		26 109	5 796	711	1 489	2 073	2 073
ProQuest Dissertations & Theses		9 483	6 681	282	855	2 317	2 317
ProQuest Health and Medicine		43 772	6 681	282	855	2 317	2 317

Institutional Repositories

210 mm

<u>Resource Used</u> II <u>Query</u>	A	B	C	V1	V2	V3
Universität Würzburg	143	18	14	143	143	143
Friedrich-Alexander-Universität Erlangen-Nürnberg	88	7	3	88	88	88
Eberhard-Karls-Universität Tübingen	643	509	710	755	755	755
Forschungszentrums Jülich	4	3	0	0	0	0
Ruprecht-Karls-Universität, Heidelberg	161	2	23	0	0	0
Health Services Research Projects in Progress	8	0	0	0	0	0

Medical Repositories

210 mm

<u>International European Repositories</u>	A	B	C
Electronic Theses Online Service (ETHOS) British Library	22	2	0
Center for Research Libraries Foreign Dissertation	537	1	538
DART-Europe E-theses Portal	30	18	30
National Institute for Health and Clinical Excellence (NICE)	24	0	0
Public Health England	1	0	0
UK Department of Health	22	172	95
Nature Precedings	15	1	0
World Health Organization	93	0	0

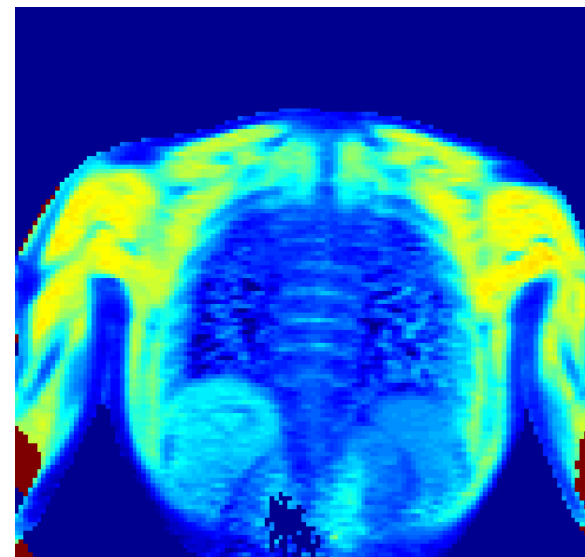
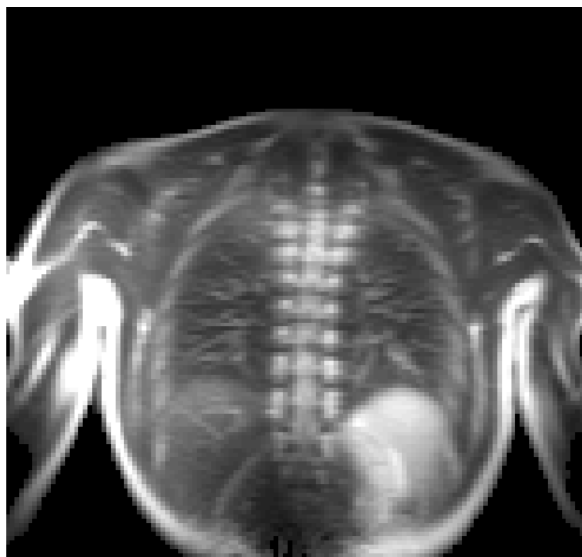
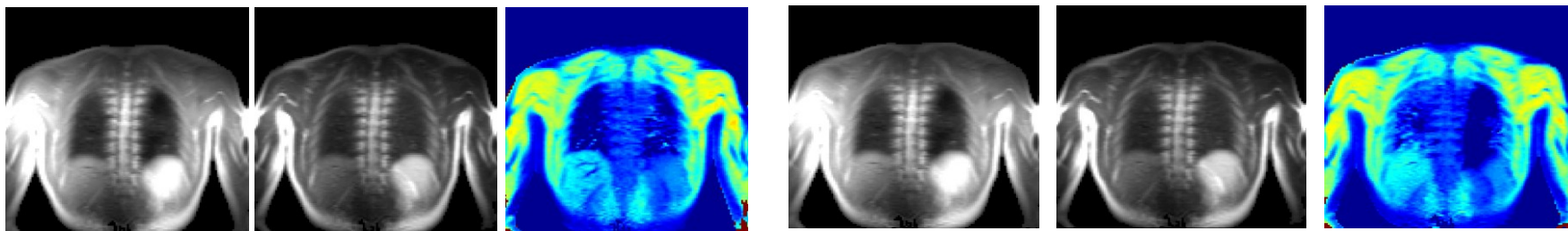
Data Overview

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<u>Data Type</u>	<u>Size</u>
Single data set (i.e., an individual MRI image received using a measuring protocol)	3 - 4 MB
RAW data sets (total images per scientific project)	80 - 100 GB
Laboratory notes and diaries (evaluation of single data sets, parameters)	--- MB
Summaries and statistics (comparison of data sets per chosen parameter)	--- MB
Conference materials (posters, presentation, supportive materials)	2 - 3 GB
Supportive materials for peer-reviewed outcomes (images, tables, graphs)	--- MB
Programming files (measurement and evaluation files, necessary .exe programs)	35 - 60 GB
Research-related literature and data (related articles, images etc.)	2 GB
Total size of all the related project materials	100 - 170 GB

RAW Data and MRI Images

210 mm



Laboratory Diary

210 mm

HEIDELBERG

a) HTC 50 / 800 / 100 / 110 2x 20/40/50/60/70/80/100/120
 b) Delay 0 / 25 / 50 / 75 / 100 / 120 / 150 / 200 / 250 / 300 / 400 / 500 / 600 / 700 / 800 / 900 / 1000 / 1100 / 1200 / 1300 / 1400 / 1500 / 1600 / 1700 / 1800 / 1900 / 2000 / 2100 / 2200 / 2300 / 2400 / 2500 / 2600 / 2700 / 2800 / 2900 / 3000 / 3100 / 3200 / 3300 / 3400 / 3500 / 3600 / 3700 / 3800 / 3900 / 4000 / 4100 / 4200 / 4300 / 4400 / 4500 / 4600 / 4700 / 4800 / 4900 / 5000

a) 2x repeats per breath cycle
 b) 1x repeats - respiration air/oxy 50 = 1. pl/bc
 80 = 2. pl/bc

PIGGY 1, 8 start 12:45 end 16

1) AIR - ^{INS} respiration start 13:15
 a) delay (HTC) 0 = 2/4/2 20 HTC
 20/40/50/60/70/80/100/120/140/160/180
 b) delay
 0/25/50/75/100/110/120/130/140/150/160/170/180/190/200/210/220/230/240/250/260/270/280/290/300/310/320/330/340/350/360/370/380/390/400/410/420/430/440/450/460/470/480/490/500

2) OXY - ~~respiration~~ inspiration?
 a) delay (HTC) 20/40/50/60/70/80/90/100/120/140/160/180
 b) delay 0/25/50/75/100/110/120/130/140/150/160/170/180/190/200/210/220/230/240/250/260/270/280/290/300/310/320/330/340/350/360/370/380/390/400/410/420/430/440/450/460/470/480/490/500

RZ ASL.3 F0.7
 Table 2mm Phase -2, Lead -1.3 Slice -52.3

- Hand-written example
 - Usually supported by materials in electronic format
- Individual organization
- Side notes
- Personal markings
- Ideas and thoughts during measurement

Laboratory Diary

210 mm

HEIDELBERG

a) HTL 50 / 800 / 100 / 110 2x 20
 b) Delay 0 / 25 / 50 / 75 / 100 / 200 / 250 / 300 5.5 4.5
 1.4K / 1.5K / 1.6

a) 2x repeats per breath
 b) 1x repeats - respirator

1) AIR - 1MS
 a) delay (HTL) 20/2
 b) del

2) 10
 b) delay

NOT FOR PUBLIC RELEASE

0 / 160 / 180
 200 / 200 / 100

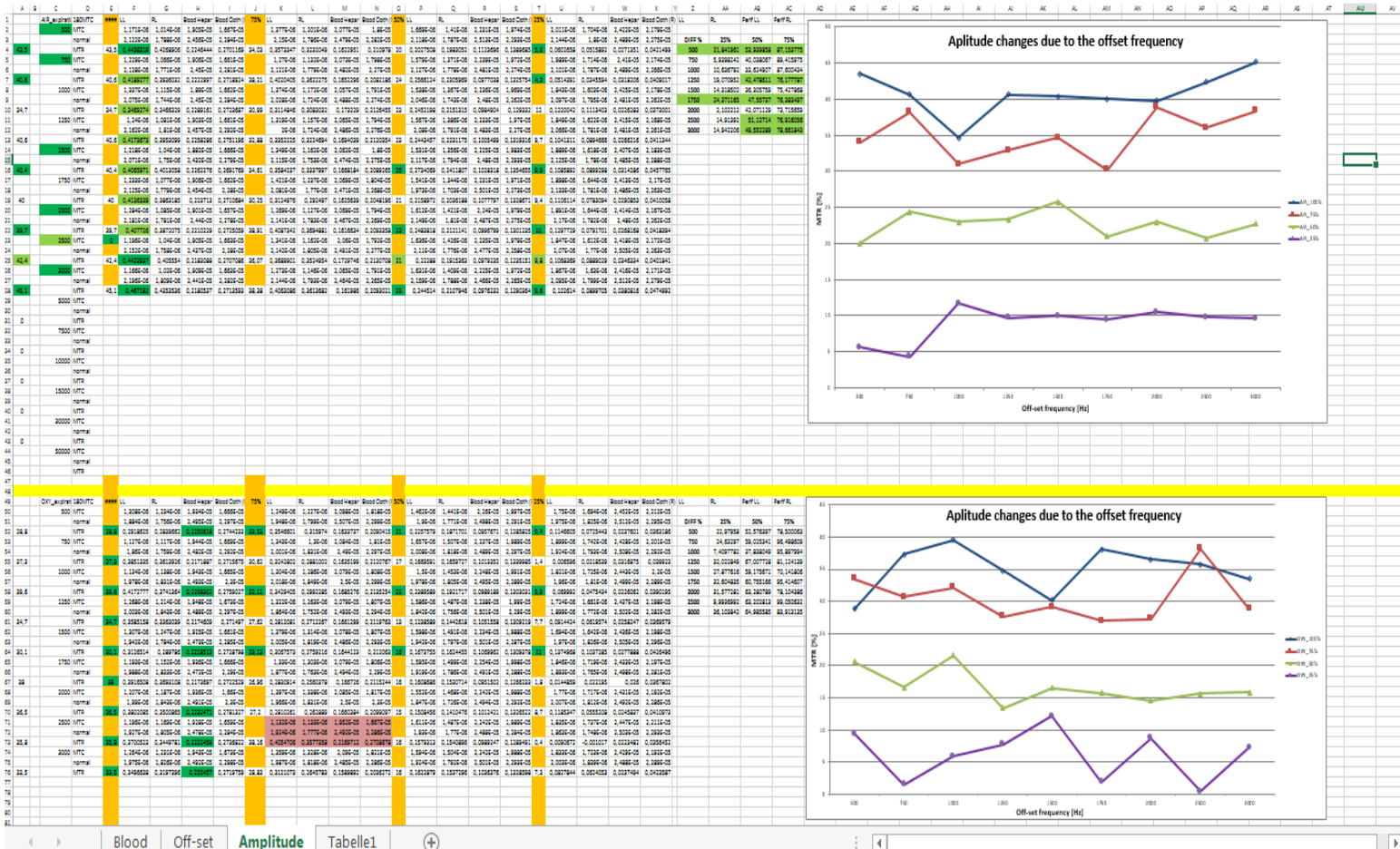
spiration?
 10/60/70/80/90/100/120/140/160/180
 1/75/100/110/200/250/300/1K/2K/3K/4K/4K/6K

RZ A. 3 F 0.7
 Table 2mm Phase -2, Lead -1.3 Slice -52.3

- Hand-written example
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Individual Data Set Report

210 mm

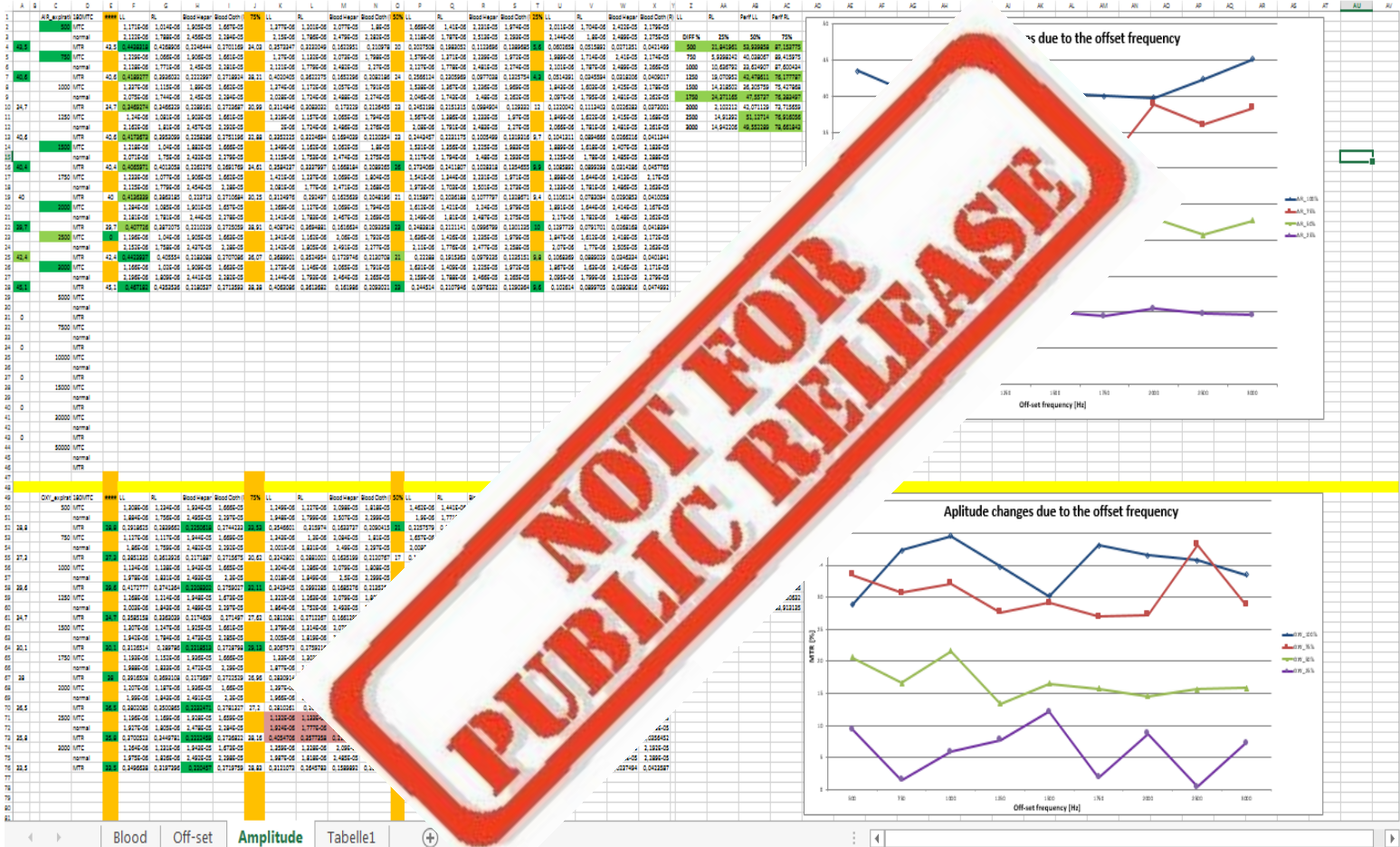


➤ Personal organization and markings

➤ Orientational data visualization

Individual Data Set Report

210 mm



➤ Personal organization and markings

➤ Orientational data visualization

From Dark to Grey Data

210 mm

Challenges technical

- Storage for 1-100 terabits (RAW data) per scientific project
- No universal forms for individual data types
- Organization and indexing of metadata

Challenges ethical

- Human data
- Missing guidelines
- Legal issues – rights and licenses

Challenges personal

- Search for related data
- Writing
- Statistics
- Style (language / graphic)

Recommendations

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- **Ethical guidelines** for biomedical dark data, including personal information to prevent their misuse/release to public (non-medical) audience
- **Determine** which **data sources** should be stored
- **Prepare universal formats and platforms**
- Proper **structure of outputs** for indexing and retrieval
- **Develop an overall searching tool/platform** for all the (at least topic-related) repositories

Summary

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- **Grey literature** is not **only conference materials** and **dissertations**
- **Scientists' needs** can be very specific **according to** each individual's **research topic and interest**
- **Case study in Biomedical Engineering** involves information directly-related to a specific research topic and presents different types of dark data
- **To encourage** more **scientists to share** dark data in grey literature repositories, it is necessary to prepare highly user (i.e., scientist) friendly environments
 - **Prepare standards** for different types of dark data
 - **Ethical guidelines** for the field of Biomedicine
 - Develop **search tools** and platforms for searching across (all) possible resources/repositories

Discussion

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Thank You for Your Attention!