

## European roadmap for implementation of sex and gender in biomedicine and health research

**FP 7 602050**

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## The EUGenMed Project

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- ... aims at the introduction of sex and gender aspects into biomedicine and health research
- This approach, focusing on women and men equally will lead to a more efficient use of resources and improve the health of European citizens.
- It will build on existing activities and develop an interdisciplinary, open, inclusive and transparent European Gender Health Network including all stakeholders.



## Why do we need gender in biomedical and health care research?

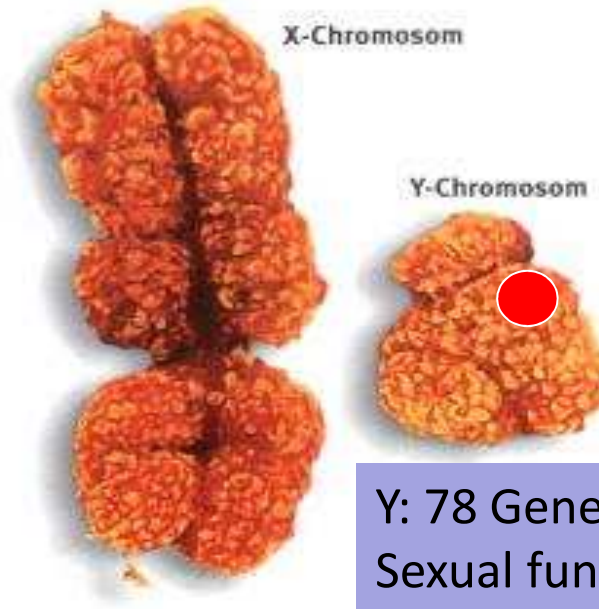
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- Women and men have **different** manifestations of diseases, pathophysiology, response to therapy, response to interventions and drugs, awareness of risk, environmental exposition, expectations, attitudes towards management, communication styles as patients and doctors
- Gender is an important quality issue in medicine
- We have to consider these differences to treat women and men in optimal manner.
- Biomedical research must provide optimal treatment tools for both genders



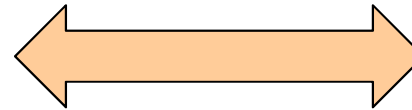
# Sex and Gender Differences

## Sex – biological facts, Genes and Hormones



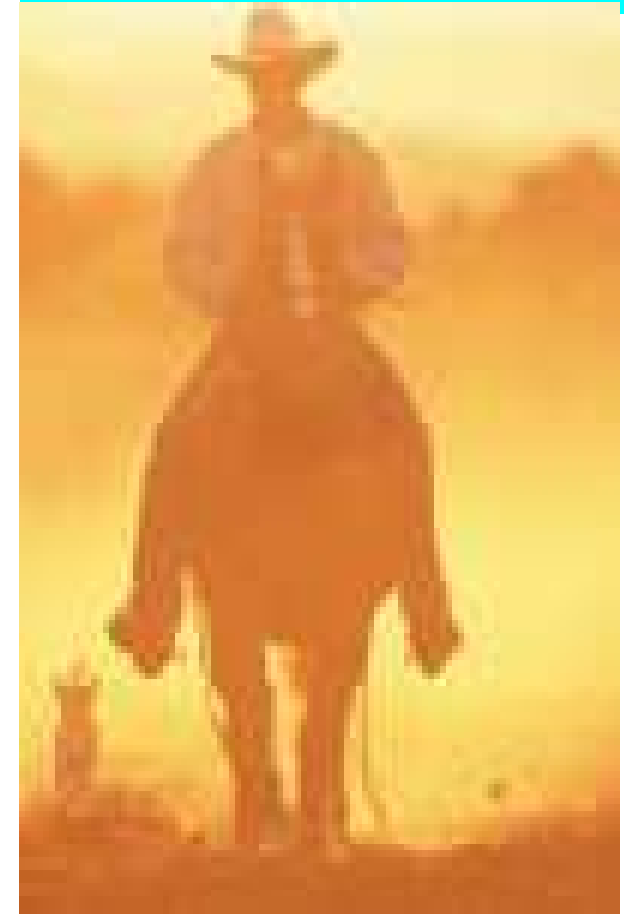
X: ca 1500 Genes  
Heart-, Brain-, Immune function

Biological sex  
affects  
behaviour



Environment  
leads to  
epigenetic  
chromatin  
modifications

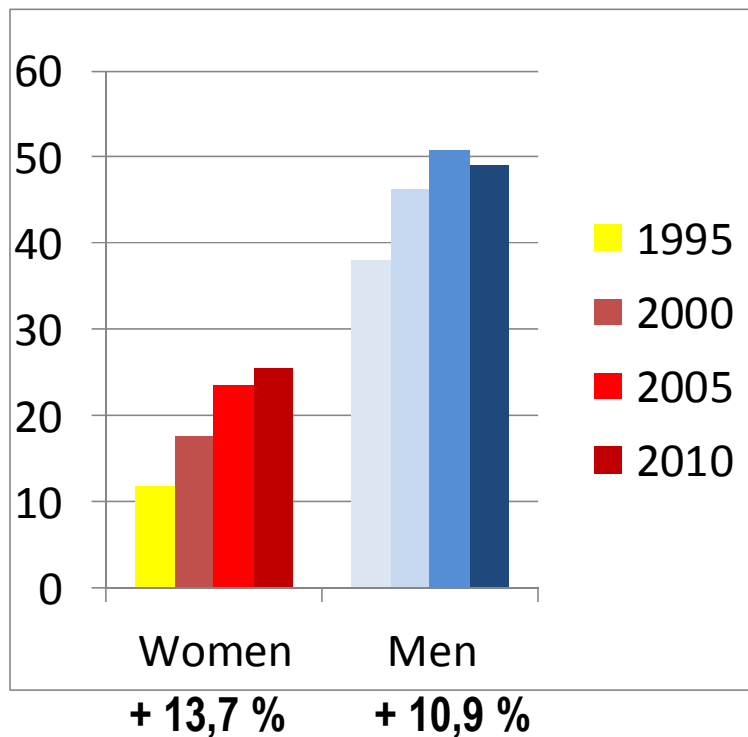
## Gender – Socio-cultural facts



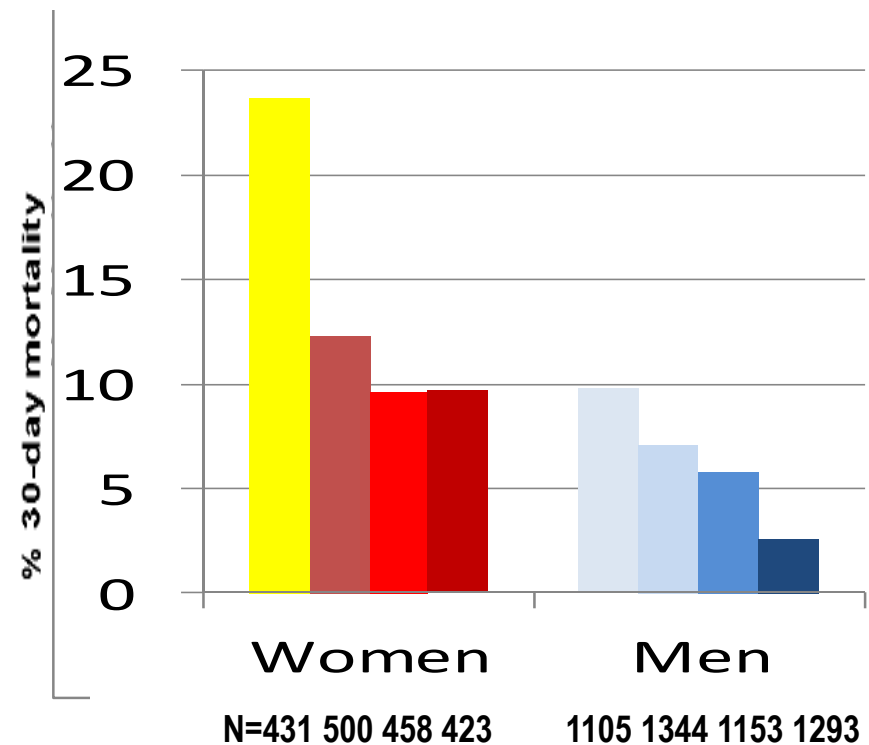
## France: Myocardial infarction in women: younger, higher mortality than in men

- Data from 4 country-wide registries, in 5 year intervalls, 60-80 % of CCU
- 6707 Pat

Percentage of patients < 60 years increases steeper in women

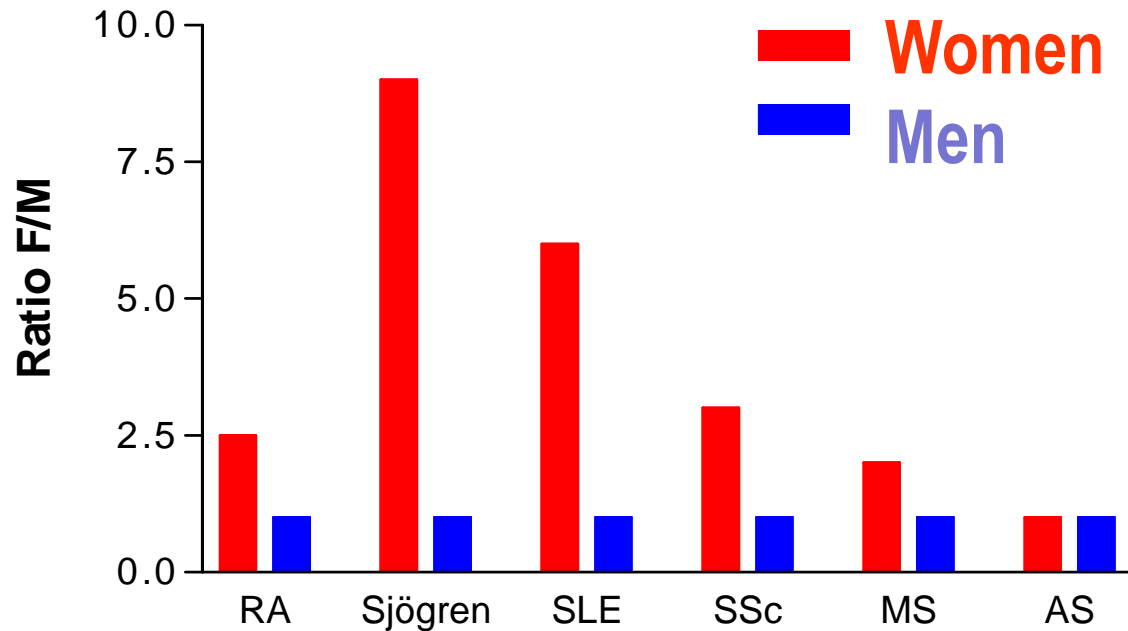


30 Day mortality is higher and decreased less in women than in men



## Autoimmune diseases in women and men

Autoimmune diseases have a higher prevalence in women than in men  
Research frequently neglects the S&G differences



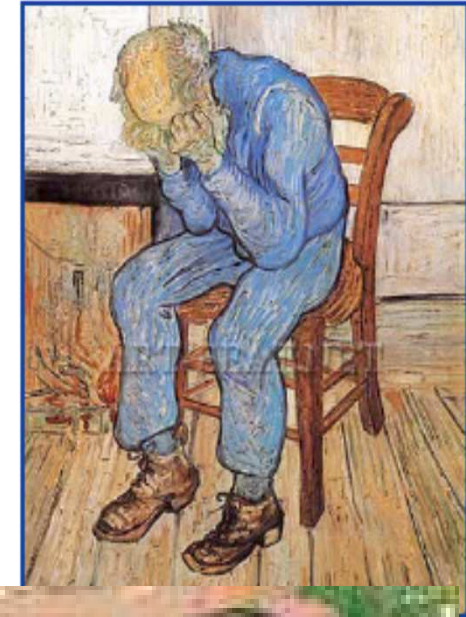
RA: rheumatoid arthritis, SLE: lupus erythematoses, SSc: Scleroderma; MS: multiple Sclerosis, AS: Spondylitis ankylosans

# Gender differences in psychiatric diseases



## Men:

- Antisocial Personality
- Substance abuse
- Completed suicide



## Women:

- Anxiety disorders
- Depression
- Attempted Suicide
- Eating disorders
- Posttraumatic syndrome



## Sex and Gender differences are common in human diseases

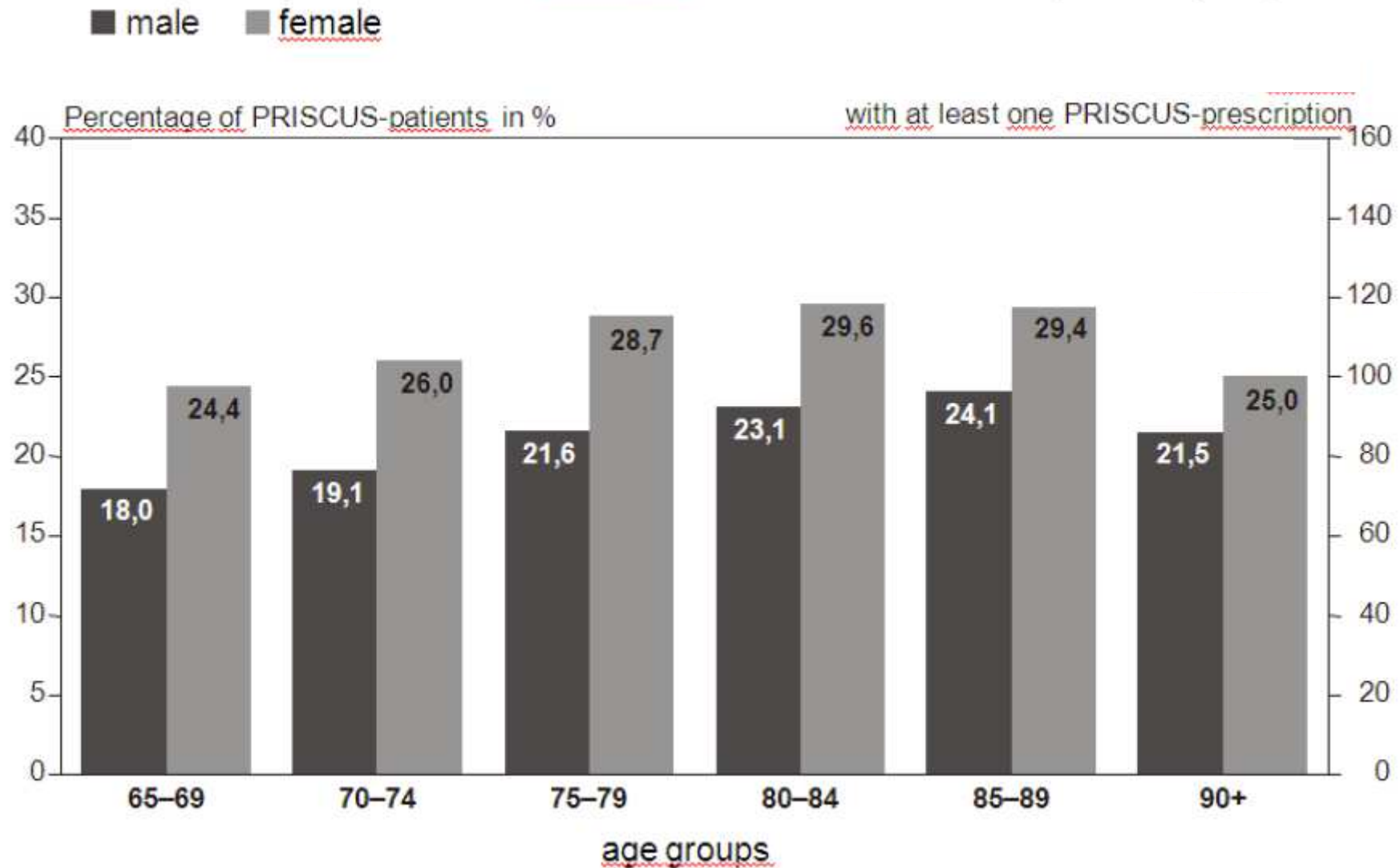
**Table 1** | Publications with sex and gender differences in the most frequent clinical entities

Cardiology	Rheumatology/ Immunology	Pneumology	Nephrology	Gastro- enterology/ Hepatology	Neurology	Endo- crinology	Oncology	Haematology
Hypertension (414)	Lupus erythematosus (68)	Asthma (140)	Renal failure (27)	Hepatitis B (22)	Multiple sclerosis (65)	Diabetes mellitus (447)	Skin carcinoma (45)	Anaemia (44)
Myocardial infarction (275)	Rheumatoid arthritis (41)	Lung cancer (116)	Diabetic nephropathy (11)	Hepatitis C (26)	Stroke (129)	Obesity (349)	Gastric cancer (25)	Leukaemia (49)
Heart failure (153)	Systemic sclerosis (3)	Chronic obstructive pulmonary disease (36)	Glomerulonephritis (9)	Hepato-cellular carcinoma (37)	Alzheimer's disease (104)	Osteoporosis (123)	Renal cell carcinoma (17)	Lymphoma (34)
Atrial fibrillation (38)	Fibromyalgia (15)	Pulmonary hypertension (12)	Polycystic kidney disease (12)	Inflammatory bowel disease (13)	Epilepsy (56)	Hypothyroidism (33)	Bladder cancer (22)	Thrombocytopenia (6)
Coronary heart disease (207)	Sjögren's syndrome	Pulmonary embolism (110)	Renal artery stenosis (0)	Colorectal cancer (24)	Parkinson's disease (69)	Hyperthyroidism (16)	Thyroid carcinoma (16)	Purpura (2)
Cardiomyopathy (41)	Ankylosing spondylitis (11)	Sarcoidosis (6)	IgA Nephropathy (2)	Autoimmune Hepatitis (2)	Muscular dystrophy (11)	Morbus Addison/Cushing disease (5)	Pancreatic carcinoma (10)	Agranulocytosis (0)





# Inappropriate medication in the elderly – more frequent in women



## Sex matters: Drugs can affect sexes differently

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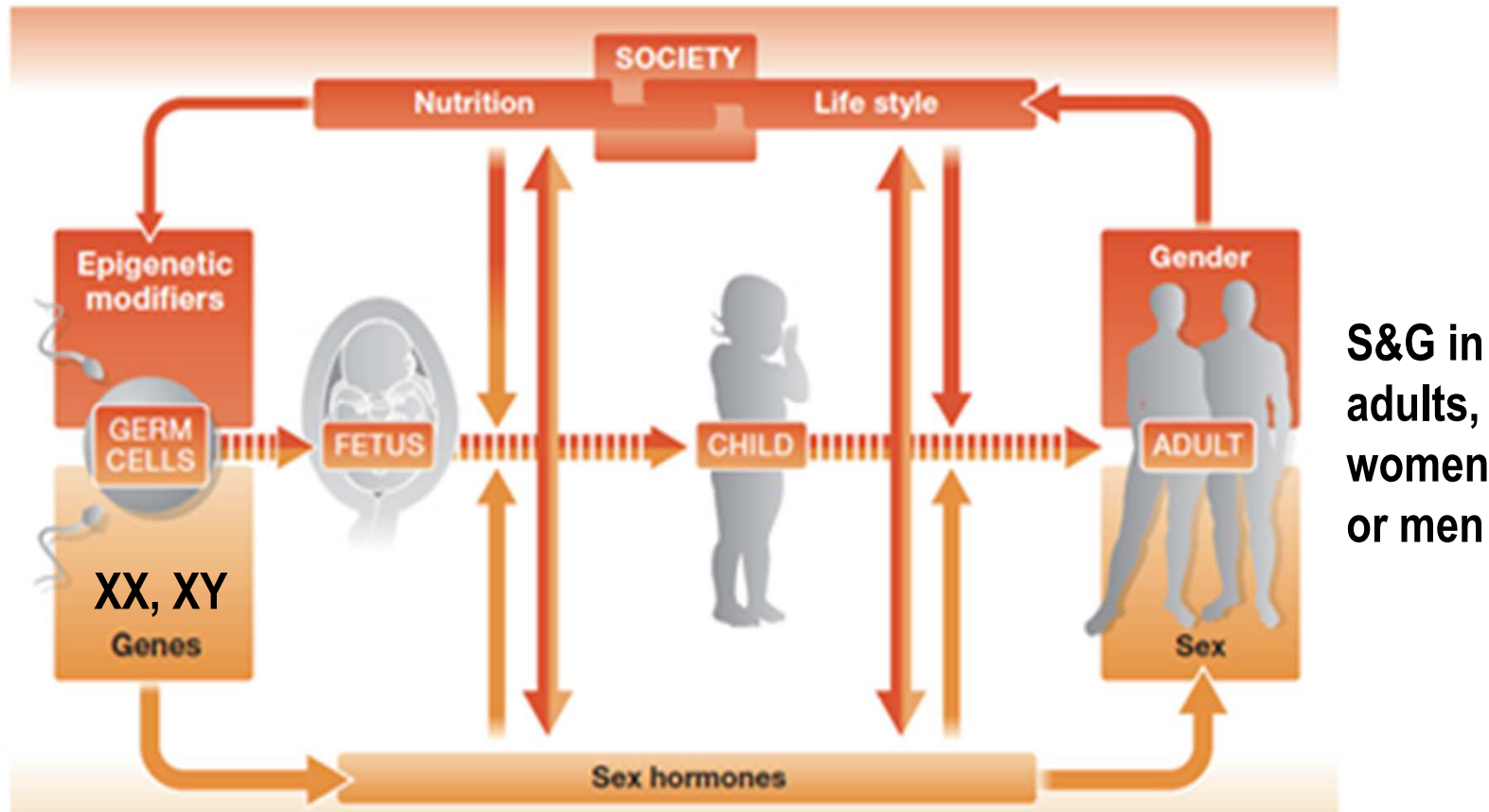
- More and more, scientists are realizing that the differences between the sexes are dangerously understudied
- CBSNews.com , 2014Feb 09.
- Earlier this year, the **Food and Drug Administration** made an unusual and surprising announcement. **It cut the recommended dose** of the most popular sleep drug in the country, **Ambien, in half for women**. It turns out men and women metabolize Ambien, known generically as Zolpidem, very differently, leaving women with more of the drug in their bodies the next morning, and therefore at a greater risk of impaired driving.
- Basically known since 1992 – Data sheet at FDA describes 40 % difference in blood levels



<http://www.cbsnews.com/news/sex-matters-drugs-can-affect-sexes-differently/>

# Gender medicine goes beyond personalized medicine

**Gender medicine: includes life style, sociocultural and environmental factors**



Personalized medicine: based on individualized biological facts, frequently genomic



## Goals of EUGenMed

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- **Implementation of S&G in European biomedicine and health care research**
- **Assembly of all relevant stakeholders**
- **Inclusion of all biomedical and health care areas where S&G are relevant - to speak with a single voice**
- **Elaborating a common vision of gender medicine including general hypotheses, research areas, medical applications, teaching, communication and dissemination strategies**



# The EUGenMed project

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## Specific aims

### I. identify the most relevant S&G topics in different biomedical fields

- Clinical medicine and pharmacology
- Public health and prevention
- Basic research and drug development
- Medicines regulation and medical education

**and bring the stakeholders together!**



# The EUGenMed project

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## II identify target audiences

Academia

industry

Medical societies, NGO's, patient organizations

Regulating bodies

practioneers, students, lays

## III generate strategies for communication and dissemination

conferences

journal articles,

teaching books

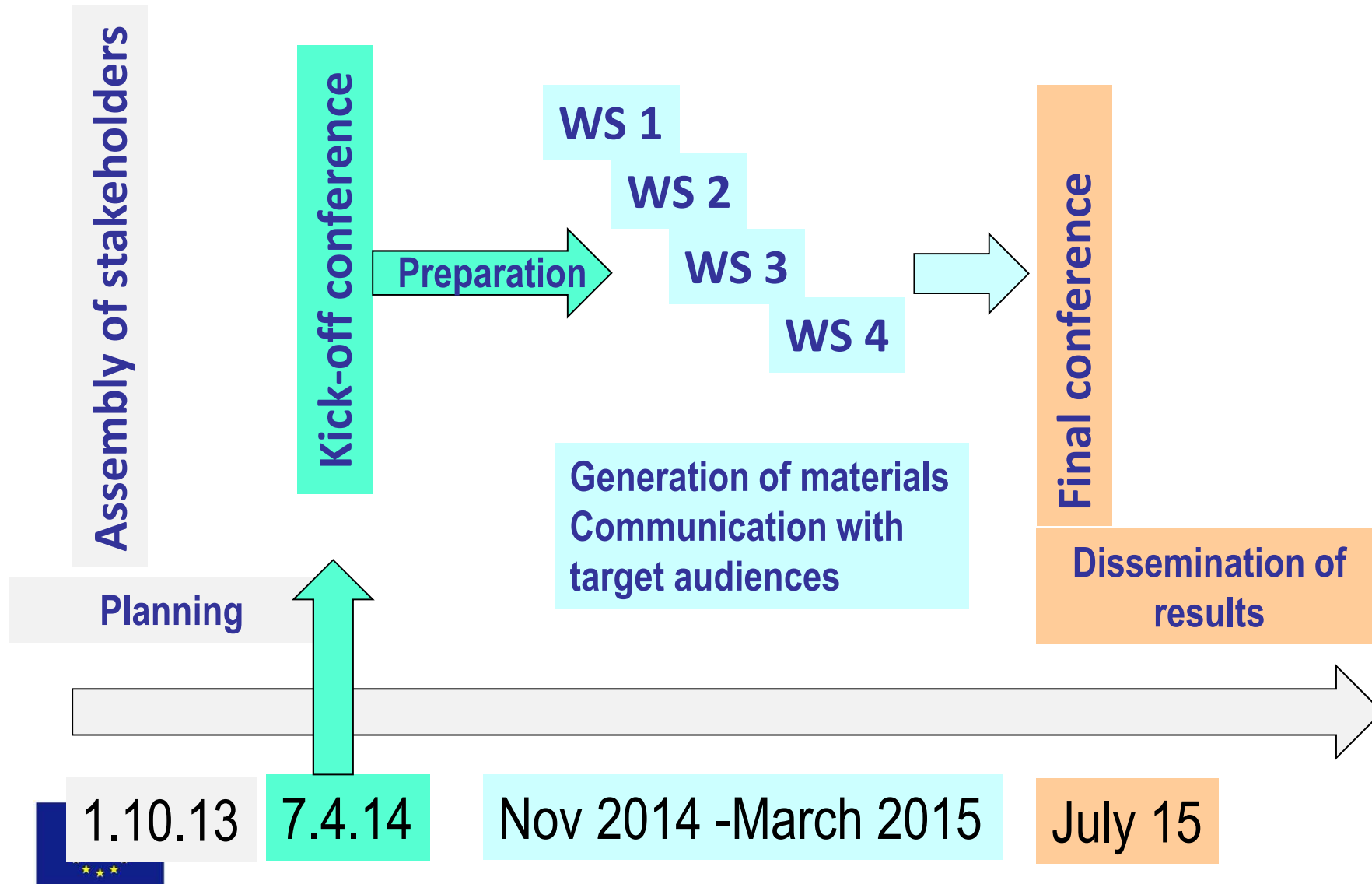
recommendations and guidelines

Electronic and social media

III



# Structure and Timelines of EUGenMed



## **Kick-off conference: 6 sessions to prepare 4 workshops in an interdisciplinary approach**

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- **Medicine and pharmacology**
- **Public health and prevention**
- **Basic research and drug development**
- **Medicines regulation and education**
  
- **Discuss target audiences**
- **Discuss communication strategies**
  
- **...we do not intend to answer the suggested questions at the kick-off conference but that we are planning workshops (WS) to answer these questions!**

