



Endocrinopatie e Ambiente Lavorativo



Bari,
7-10 novembre 2013

Take Home Messages

A. Di Ciula – ISDE Italia



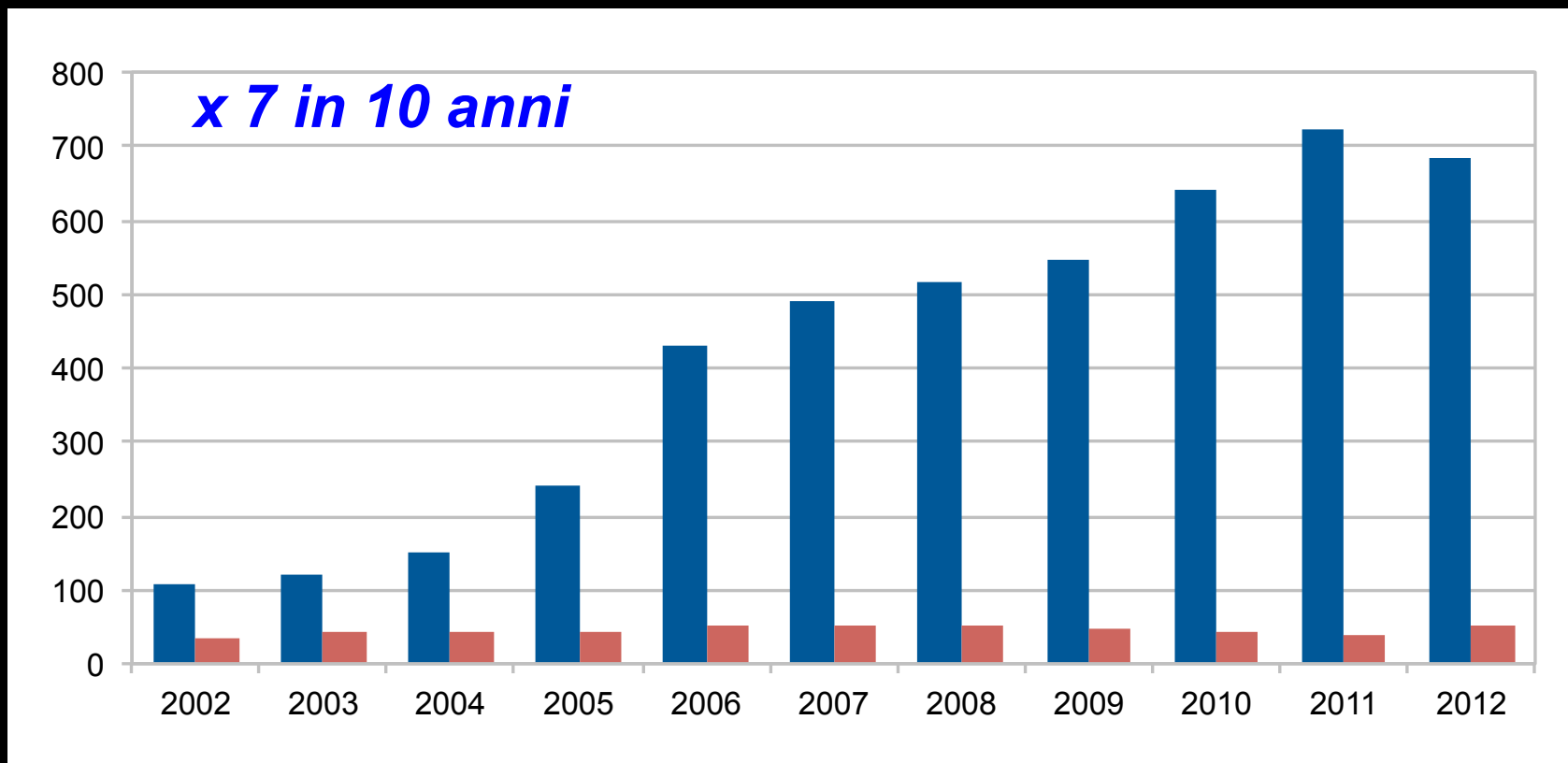


PubMed search, years 2002 - 2012



Bari,
7-10 novembre 2013

Endocrine disruptors
Ionizing radiations } & endocrine





Ake Bergman, Dept. of Materials and Environmental Chemistry, Stockholm University, Sweden

(International Programme on Chemical Safety – WHO 2012 report)

“In 2002 we only considered a very limited number of persistent organic pollutants (dioxins, PCBs, DDTs, HCHs, and HCB), but now we can give examples of over **800 chemicals** that show endocrine disrupting activity”

Endocrine disruptors cause toxic fallout

A spat has erupted between endocrinologists and a group of toxicologists over how best to regulate endocrine-disrupting chemicals, as the European Commission prepares to release a new strategy on the issue. David Holmes reports.

“A storm is brewing on both sides of the Atlantic as toxicologists and endocrinologists clash over how best to assess the threat posed by chemicals that can disrupt the body’s endocrine system (endocrine disrupting chemicals, or EDCs”).



Take Home Messages



Bari,
7-10 novembre 2013

1. L'interesse della ricerca per le relazioni tra inquinanti chimici (in particolare EDCs) e endocrinopatie è in continuo incremento

Epoxy resin workers

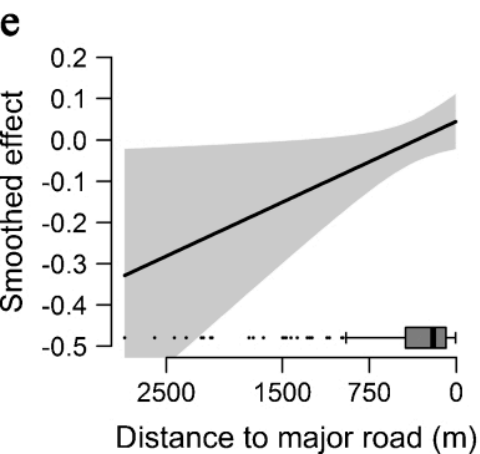
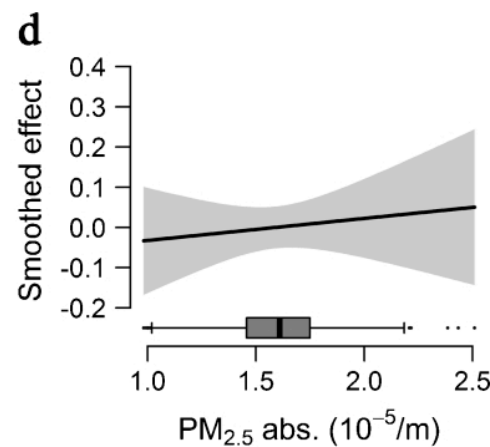
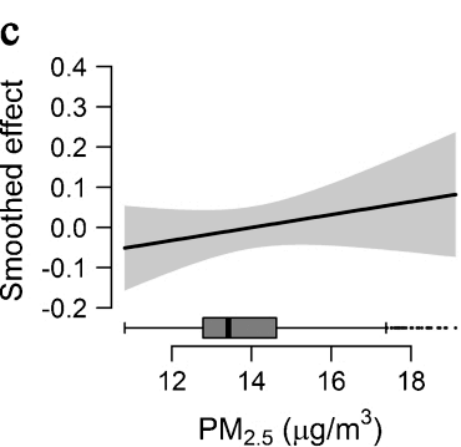
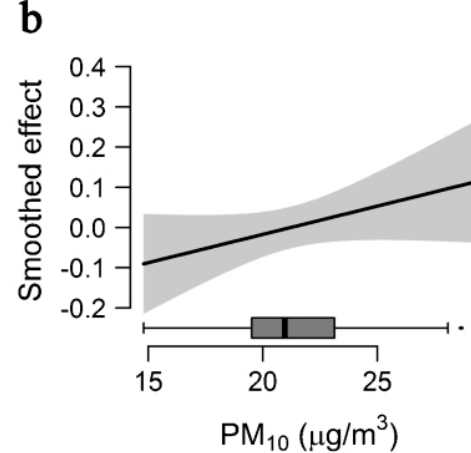
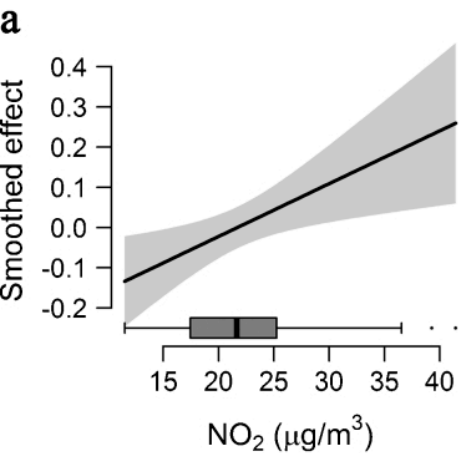
“Higher BPA concentrations were associated with clinically abnormal concentrations of FT3, FT4, TT3, TT4, thyroid-stimulating hormone, glutamic-oxaloacetic transaminase and γ -glutamyl transferase. Workers with higher BPA concentrations showed higher FT3 concentrations (linear trend: $p < 0.001$)”

Urine Bisphenol-A (BPA) Level in Relation to Overweight among School-age Children.

Age	BPA level μg/L	Weight >90th		Crude OR (95% CI)	Adjusted OR* (95% CI)
		No	Yes		
<i>Among Girls</i>					
All	<2	310 (82.45%)	66 (17.55%)	Reference	Reference
	≥2	220 (78.85%)	59 (21.15%)	1.26 (0.85–1.86)	1.29 (0.83–2.01)
9–12	<2	114 (78.62%)	31 (21.38%)	Reference	Reference
	≥2	62 (63.92%)	35 (36.08%)	2.08 (1.17–3.68)	2.32 (1.15–4.65)
>12	<2	196 (84.85%)	35 (15.15%)	Reference	Reference
	≥2	158 (86.81%)	24 (13.19%)	0.85 (0.49–1.49)	0.90 (0.48–1.72)
<i>Among Boys</i>					
All	<2	281 (75.54%)	91 (24.46%)	Reference	Reference
	≥2	229 (76.59%)	70 (23.41%)	0.94 (0.66–1.35)	0.82 (0.55–1.23)
9–12	<2	84 (71.19%)	34 (28.81%)	Reference	Reference
	≥2	83 (72.81%)	31 (27.19%)	0.92 (0.52–1.64)	0.71 (0.34–1.45)
>12	<2	197 (77.56%)	57 (22.44%)	Reference	Reference
	≥2	146 (78.92%)	39 (21.08%)	0.92 (0.58–1.46)	0.87 (0.52–1.45)

*Odds ratio adjusted for those factors listed in Table 1 (age, gender, school, residence, paternal and maternal education and overweight, playing video games, unbalanced diet, eating junk food, vegetables or fruit, depression scores and sports/activities).

“higher urine BPA level (≥2 μg/L), at the level corresponding to the median urine BPA level in the U.S. population, was associated with more than two-fold increased risk of having weight >90th percentile among girls aged 9–12”



Diabetologia (2013) 56:1696–1704
DOI 10.1007/s00125-013-2925-x

ARTICLE

Long-term exposure to traffic-related air pollution and insulin resistance in children: results from the GINIplus and LISApplus birth cohorts

E. Thiering · J. Cyrys · J. Kratzsch · C. Meisinger ·
B. Hoffmann · D. Berdel · A. von Berg · S. Koletzko ·
C.-P. Bauer · J. Heinrich



Bari,
7-10 novembre 2013

Long-Term Fine Particulate Matter Exposure and Mortality From Diabetes in Canada

Robert D. Brook, MD^{1†}, Sabit Cakmak, PHD², Michelle C. Turner, PHD³,
Jeffrey R. Brook, PHD^{4,5}, Dan L. Crouse, PHD², Paul A. Peters, PHD⁶,
Aaron van Donkelaar, PHD⁷, Paul J. Villeneuve, PHD^{2,5}, Orly Brion, PHD²,
Michael Jerrett, PHD⁸, Randall V. Martin, PHD^{7,9}, Sanjay Rajagopalan,
MD¹⁰, Mark S. Goldberg, PHD¹¹, C. Arden Pope III, PHD¹² and
Richard T. Burnett, PHD^{2,3}

a 10- $\mu\text{g}/\text{m}^3$ elevation in $\text{PM}_{2.5}$ exposure was associated with an increase in risk for diabetes-related mortality (HR, 1.49; 95% CI, 1.37–1.62). The monotonic change in risk to the population persisted to $\text{PM}_{2.5}$ concentration $<5 \mu\text{g}/\text{m}^3$.

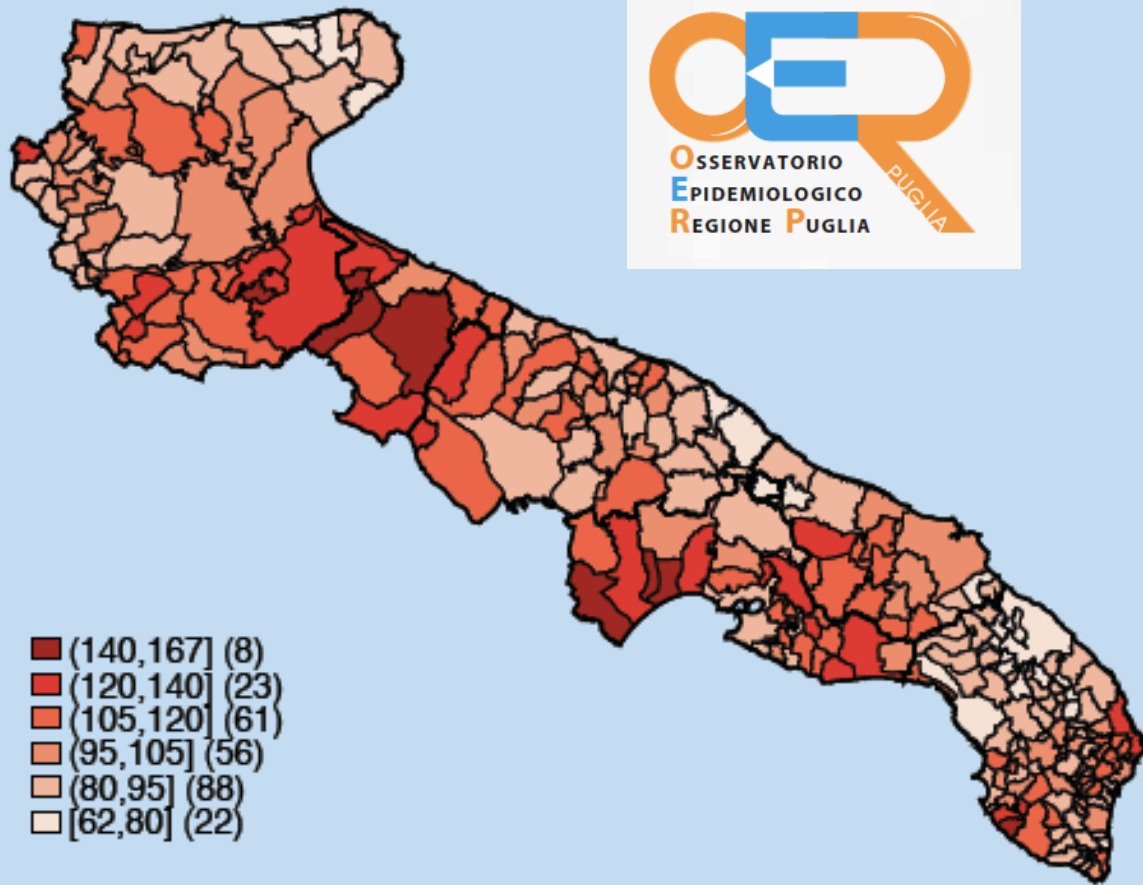
Diabetes care 2013 Oct;36(10):3313-20

OER: Eccessi di mortalità per diabete nei Comuni della ASL TA



CARTOGRAMMA 2.4

Mortalità per diabete nelle femmine. Puglia, anni 2006-2009.





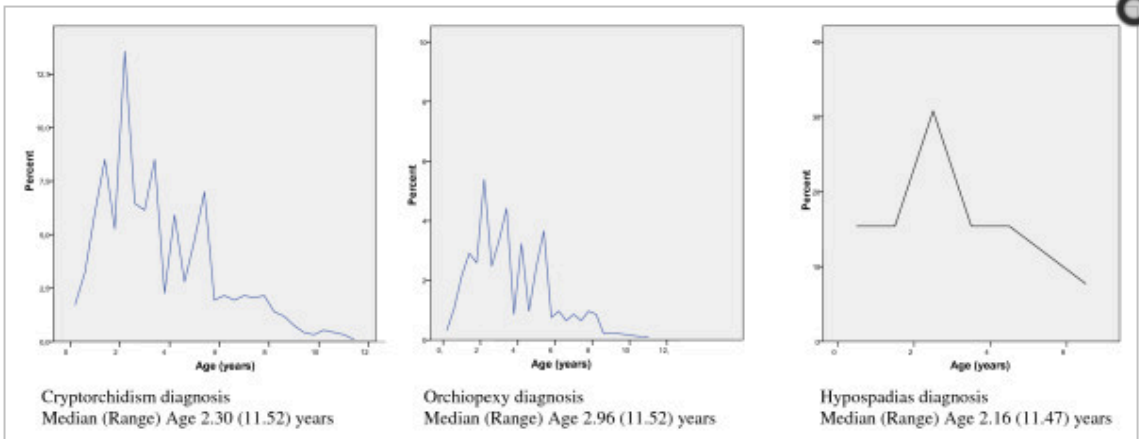
Take Home Messages



Bari,
7-10 novembre 2013

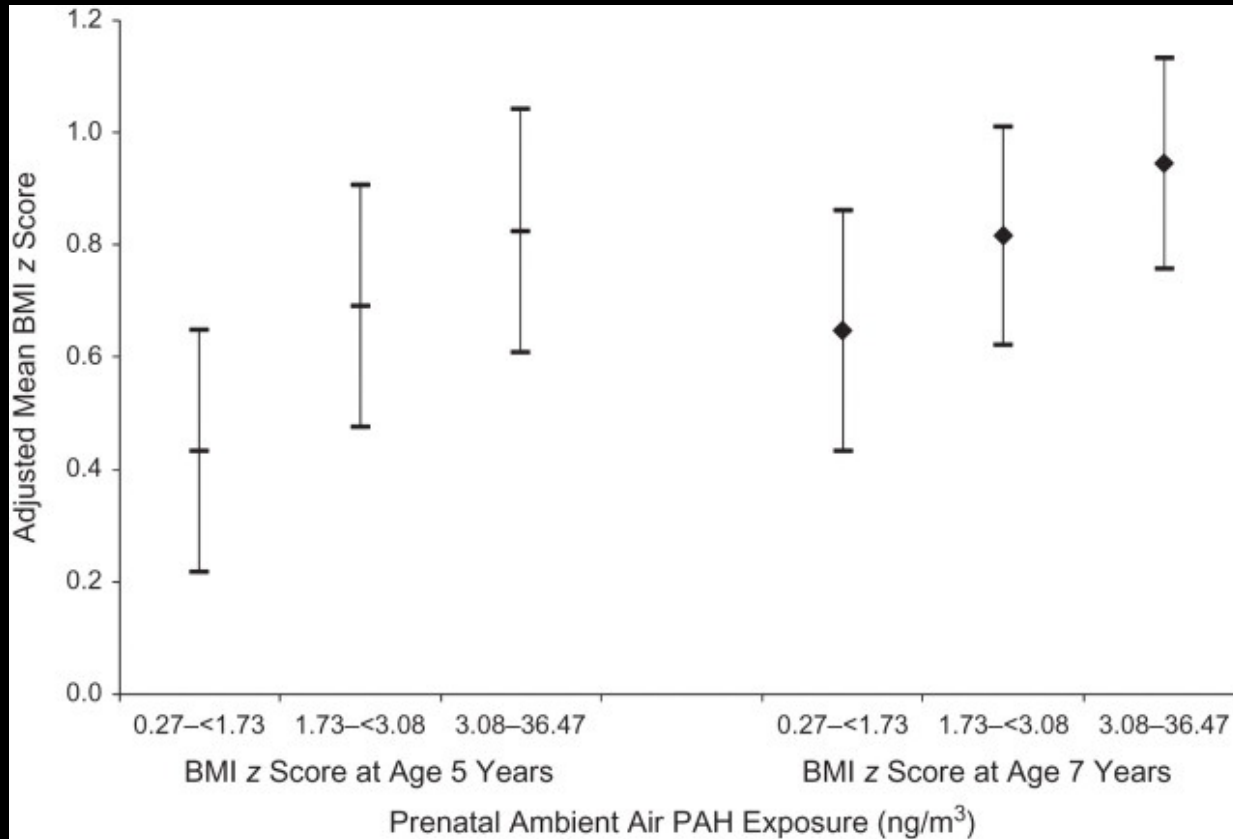
1. L'interesse della ricerca per le relazioni tra inquinanti chimici (in particolare EDCs) e endocrinopatie è in continuo incremento
2. L'area di interesse si estende sempre più alle malattie metaboliche (insulinoresistenza)

Parental occupational exposure to endocrine disrupting chemicals and male genital malformations: a study in the Danish National Birth Cohort study.



Age distribution of first hospital referral for cryptorchidism, orchiopexy and hypospadiasin the DNBC (1997-2009) .

Association of Childhood Obesity With Maternal Exposure to Ambient Air Polycyclic Aromatic Hydrocarbons During Pregnancy



EDCs: negotiating the precautionary principle

the precautionary principle should perhaps be most generous for fetuses and other populations at greatest potential risk

As we strengthen the evidence base, weighing the need to protect vulnerable populations against commercial interests will be a more attainable goal.

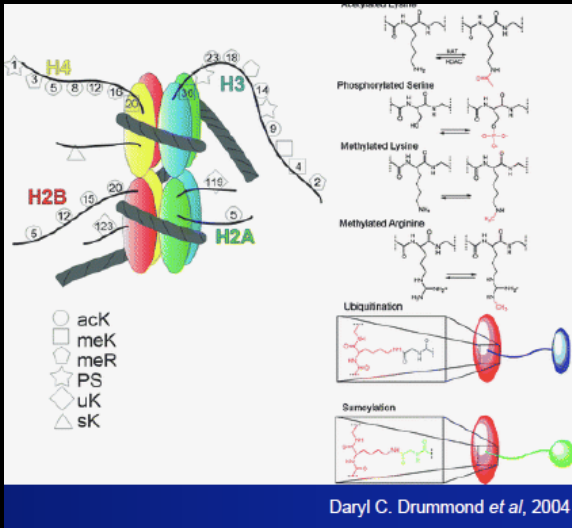


Take Home Messages

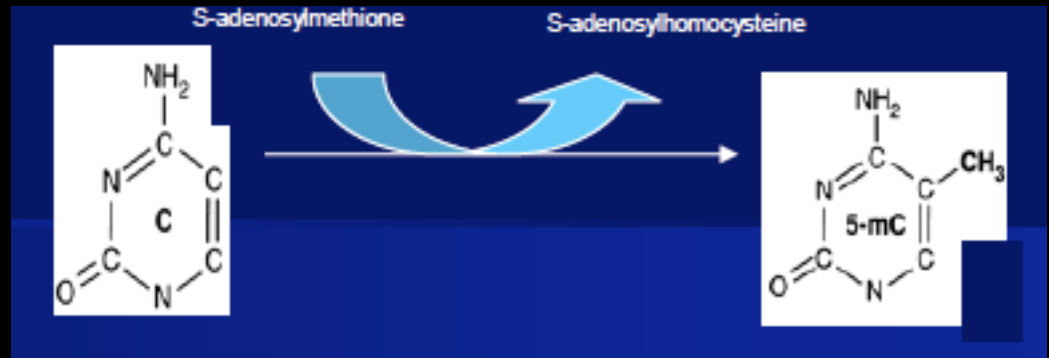


Bari,
7-10 novembre 2013

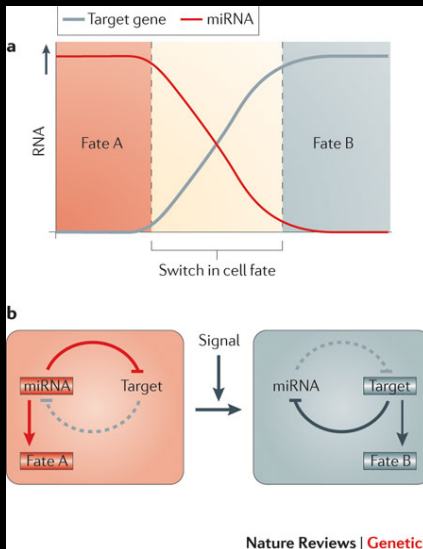
1. L'interesse della ricerca per le relazioni tra inquinanti chimici (in particolare EDCs) e endocrinopatie è in continuo incremento
2. L'area di interesse si estende sempre più alle malattie metaboliche (insulinoresistenza)
3. La presenza di endocrinopatie da EDCs in età pediatrica sottolinea l'importanza dell'inizio della esposizione in utero



Histone modification (acetylation, methylation, phosphorylation and ubiquitination)

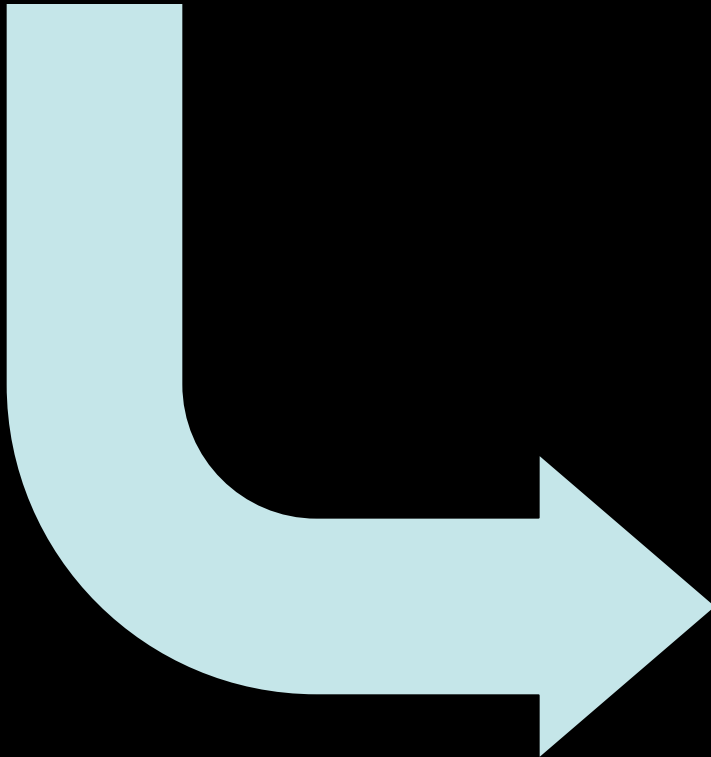


DNA methylation



miRNA mediated gene silencing

Epigenetic modifications



Fetal
programming



ELSEVIER

Chemosphere

Volume 73, Issue 7, October 2008, Pages 1145–1150



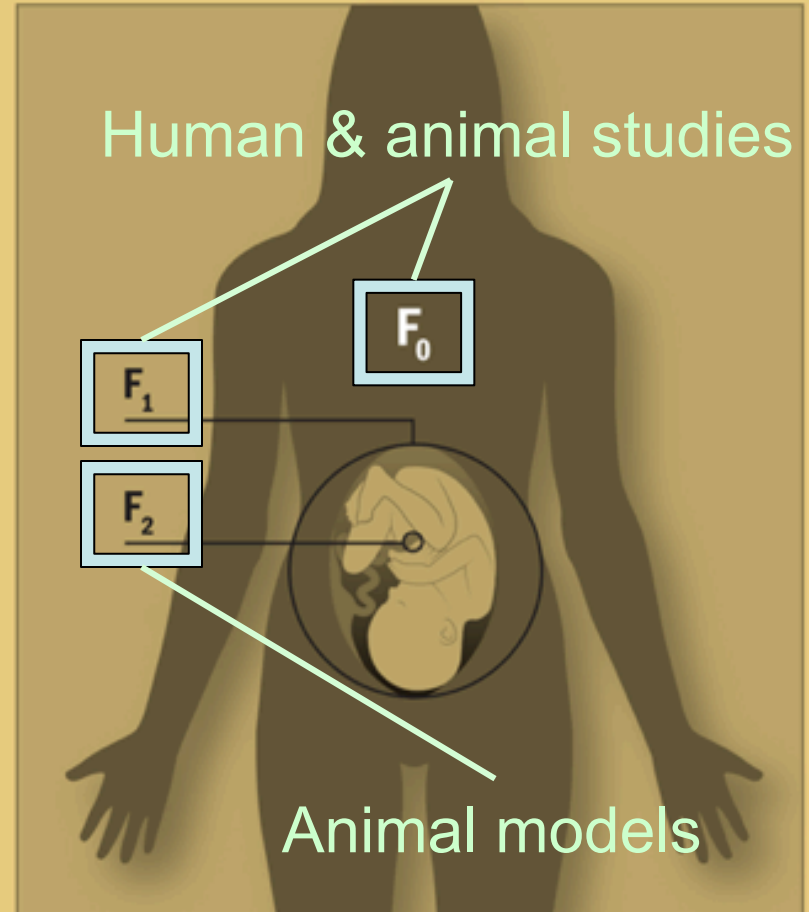
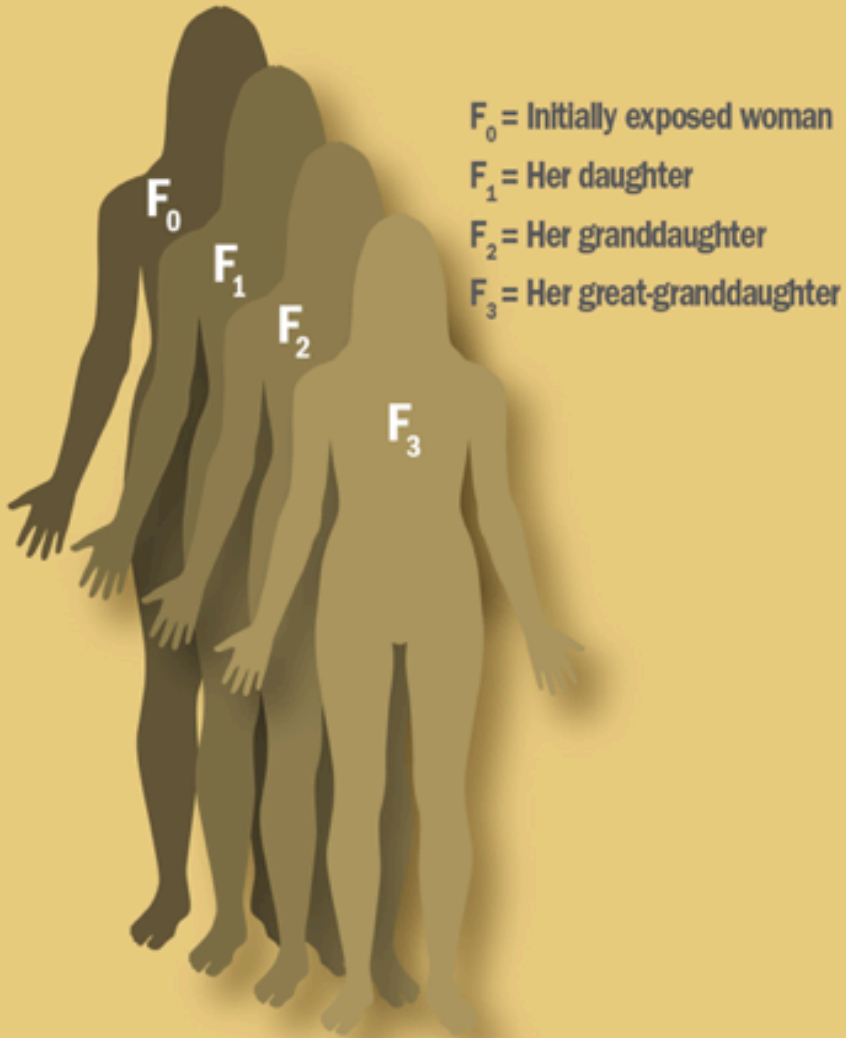
Increased thyroid volume, prevalence of thyroid antibodies and impaired fasting glucose in young adults from organochlorine cocktail polluted area: Outcome of transgenerational transmission?

Pavel Langer^a, , Anton Kočan^b, Mária Tajtáková^c, Juraj Koška^a, Žofia Rádková^a, Lucia Kšinantová^a, Richard Imrich^a, Miloslava Hučková^a, Beáta Drobná^b, Daniela Gašperíková^a, Elena Šeböková^a, Iwar Klimeš^a

137 F, 94M, **age 21-35yrs**

“such adverse effects in young adults from POLL possibly did not result from their actual OCs levels, but very likely from their exposure to high OCs levels of their mothers during their prenatal and perinatal life”.

La rivoluzione epidemiologica: il paradigma epigenetico





Take Home Messages



Bari,
7-10 novembre 2013

1. L'interesse della ricerca per le relazioni tra inquinanti chimici (in particolare EDCs) e endocrinopatie è in continuo incremento
2. L'area di interesse si estende sempre più alle malattie metaboliche (insulinoresistenza)
3. La presenza di endocrinopatie da EDCs in età pediatrica sottolinea l'importanza dell'inizio della esposizione in utero
4. l'esposizione in utero comporta danno epigenetico e "programmazione fetale", con comparsa di patologie in età adulta: limiti dell'epidemiologia "tradizionale"



Bari,
7-10 novembre 2013



Teresa Woodruff ,
Northwestern University,
Chicago, Illinois

President
of the Endocrine Society

“It’s important to keep in mind that though the science has advanced significantly in recent years on this issue, the regulatory processes have not”

“Despite growing concerns over EDCs, regulatory agencies still exclude the knowledge and experience of experts in endocrinology in their efforts to identify these chemicals. These agencies have not caught up to modern science in this issue, and until they do, they cannot fully protect public health from the potential risks of EDCs.”



Take Home Messages



Bari,
7-10 novembre 2013

1. L'interesse della ricerca per le relazioni tra inquinanti chimici (in particolare EDCs) e endocrinopatie è in continuo incremento
2. L'area di interesse si estende sempre più alle malattie metaboliche (insulinoresistenza)
3. La presenza di endocrinopatie da EDCs in età pediatrica sottolinea l'importanza dell'inizio della esposizione in utero
4. l'esposizione in utero comporta danno epigenetico e "programmazione fetale", con comparsa di patologie in età adulta: limiti dell'epidemiologia "tradizionale"
5. È indispensabile che la ricerca orienti l'identificazione di priorità e gli obiettivi per la valutazione del rischio, anche attraverso una revisione della normativa



Bari,
7-10 novembre 2013



Grazie per l'attenzione