

## Current developments in toxicology

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Published online: 27 November 2014  
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Every year, the editors give an overview over the most intensively studied fields of research and the most cited articles in toxicology. Currently, apoptosis (Kamal et al. 2014; McGrath and Seng 2013; Cardinale et al. 2012, De Brucker et al. 2011), nanotoxicology (Winkler et al. 2013; Johnston et al. 2013; Bohnsack et al. 2012; Greish et al. 2012) and in vitro systems (Li 2014; Bale et al. 2014; Eichbaum et al. 2014; Tiong et al. 2014; Roggen 2014)

represent particularly intensively studied topics; they have already been discussed separately (Hengstler et al. 2014; Hammad and Bolt 2014; Bolt 2014). Further cutting-edge topics are metabolism, developmental toxicity, nephrotoxicity, arsenicals, polymorphisms and mycotoxins. To give our readers an overview over the most cited articles in these fields, we summarized the key messages of articles recently published in the Archives of Toxicology (Table 1).

**Table 1** Key messages of recent studies in the field of metabolism, developmental toxicity, nephrotoxicity, arsenicals and mycotoxins

| Key message  | References              |
|--|-------------------------|
| Monoesters are the major metabolites of Di- <i>n</i> -butyl phthalate and diisobutyl phthalate in humans after oral application                    | Koch et al. (2012)      |
| Arsenic deregulates expression of heme oxygenase 1, interleukin-6 and VEGF in endothelial cells  | Wang et al. (2012)      |
| A polymorphism of the insulin-like growth factor-binding protein-3 was not associated with urinary bladder cancer risk                             | Selinski et al. (2012)  |
| Arsenite leads to blockage of P53 by HIF-2 alpha   | Xu et al. (2012)        |
| Maternal glyphosate exposure impairs male offspring in rats  | Romano et al. (2012)    |
| Salubrinal protects from cadmium-induced toxicity in renal cells   | Komoike et al. (2012)   |
| The human hepatoma cell line Huh-7 may represent an alternative to primary human hepatocytes in the study of drug metabolism                       | Lin et al. (2012)       |
| Potassium bromate alters expression of tight junction proteins in renal proximal tubule cells  | Limonciel et al. (2012) |
| Arsenic trioxide activates c-Src via NADPH oxidase-produced superoxide   | Tseng et al. (2012)     |
| Maternal consumption of the arsenic metabolite methylarsonous acid caused similar proliferative lesions in the male offspring as inorganic arsenic | Tokar et al. (2012)     |
| The mycotoxin Ochratoxin A seems to act by epigenetic mechanisms   | Jennings et al. (2012)  |

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**Table 1** continued

| Key message  | References                    |
|--|-------------------------------|
| Diphenyl ditelluride induces hypophosphorylation of intermediate filaments in the cerebral cortex of rats  | Heimfarth et al. (2012)       |
| Melatonin prevents nephrotoxicity of gentamicin  | Lee et al. (2012)             |
| Hypothyroidism causes fluctuations in GABAergic interneurons   | Shiraki et al. (2012)         |
| Genetic variants of glutathione S-transferase omega 1-1 are associated with the expression of inflammatory cytokines.                            | Escobar-Garcia et al. (2012)  |
| Acrylamide compromises progenitor cells in the hippocampal dentate gyrus of rats   | Ogawa et al. (2012)           |
| DMSO induces phenotypic alterations and massive alterations in gene expression in stem cells   | Pal et al. (2012)             |
| The phytochemical glucoraphasatin induces hepatic phase II metabolizing enzymes  | Razis et al. (2012)           |
| The herbicide glyphosate causes DNA strand breaks and micronuclei in vitro   | Koller et al. (2012)          |
| Cadmium modulates Ah receptor expression in the rat uterus via the estrogen receptor   | Kluxen et al. (2012)          |
| A predictive in silico tool for prediction of human bioaccumulation was established  | Tonnelier et al. (2012)       |
| The microsomal epoxide hydrolase variant 113 His/His reduces detoxification of carcinogenic epoxides   | Tumer et al. (2012)           |
| UDP GT 1A1 is the principle enzyme for puerarin conjugation in human liver   | Luo et al. (2012)             |
| Estragole, an organic compound used as a food additive, may be a genotoxic hepato-carcinogen   | Suzuki et al. (2012)          |
| The copper-based drug Casiopeina II-gly simultaneously inhibits oxidative phosphorylation and glycolysis   | Marin-Hernandez et al. (2012) |
| The mycotoxins alternariol and alternariol methyl ether induce CYP1A1 in an Ah receptor-dependent manner   | Schreck et al. (2012)         |
| Perfluorooctane sulfonate acts as a non-genotoxic carcinogen   | Jacquet et al. (2012)         |
| A low scaling factor for human inter-individual differences in formaldehyde-induced genotoxicity is recommended                                  | Zeller et al. (2012)          |
| Variants of superoxide dismutase and 8-oxoguanine DNA glycosylase conferred increased risk of hypertension when associated with arsenic exposure | Chen et al. (2012)            |

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