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# Measurements of the distal airspaces in children using the novel AiDA technique

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## Motivation

To better **understand particle deposition** in the respiratory tracts of children and adolescents—and their **susceptibility to health effects caused by air pollution**—more knowledge about the distal lung development of these groups is needed.

## Conclusions

- Age dependent trend of distal airspace radius for the groups 9–15, 15–18 year-olds and adults
- Distal airspaces grow from childhood through adolescence to adulthood

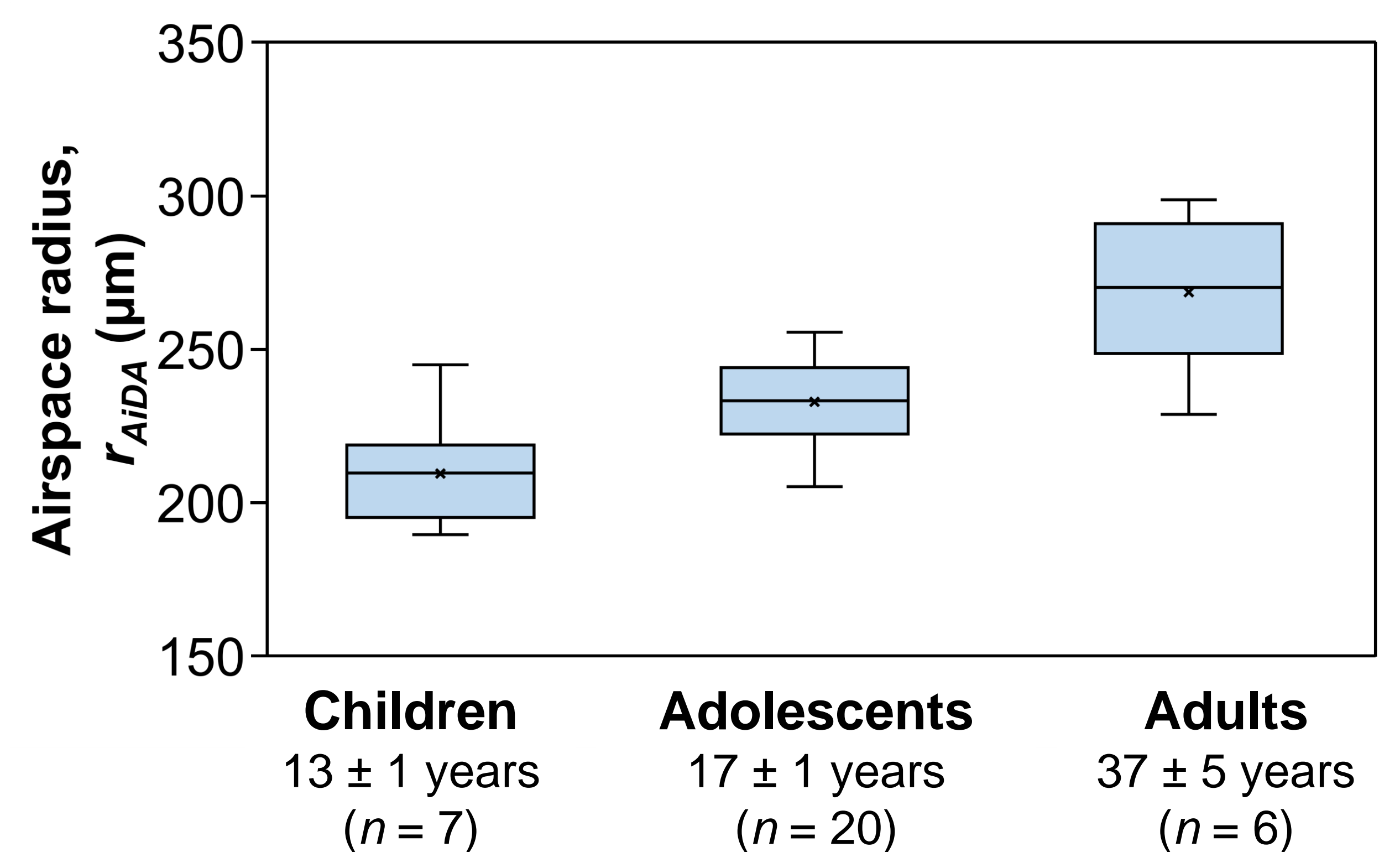


Fig. 2. Airspace radii for children, adolescents and an adult reference group. Box limits, 1<sup>st</sup> and 3<sup>rd</sup> quartiles; line in box, median; X, mean; whiskers, maximum and minimum.

## AiDA measurements

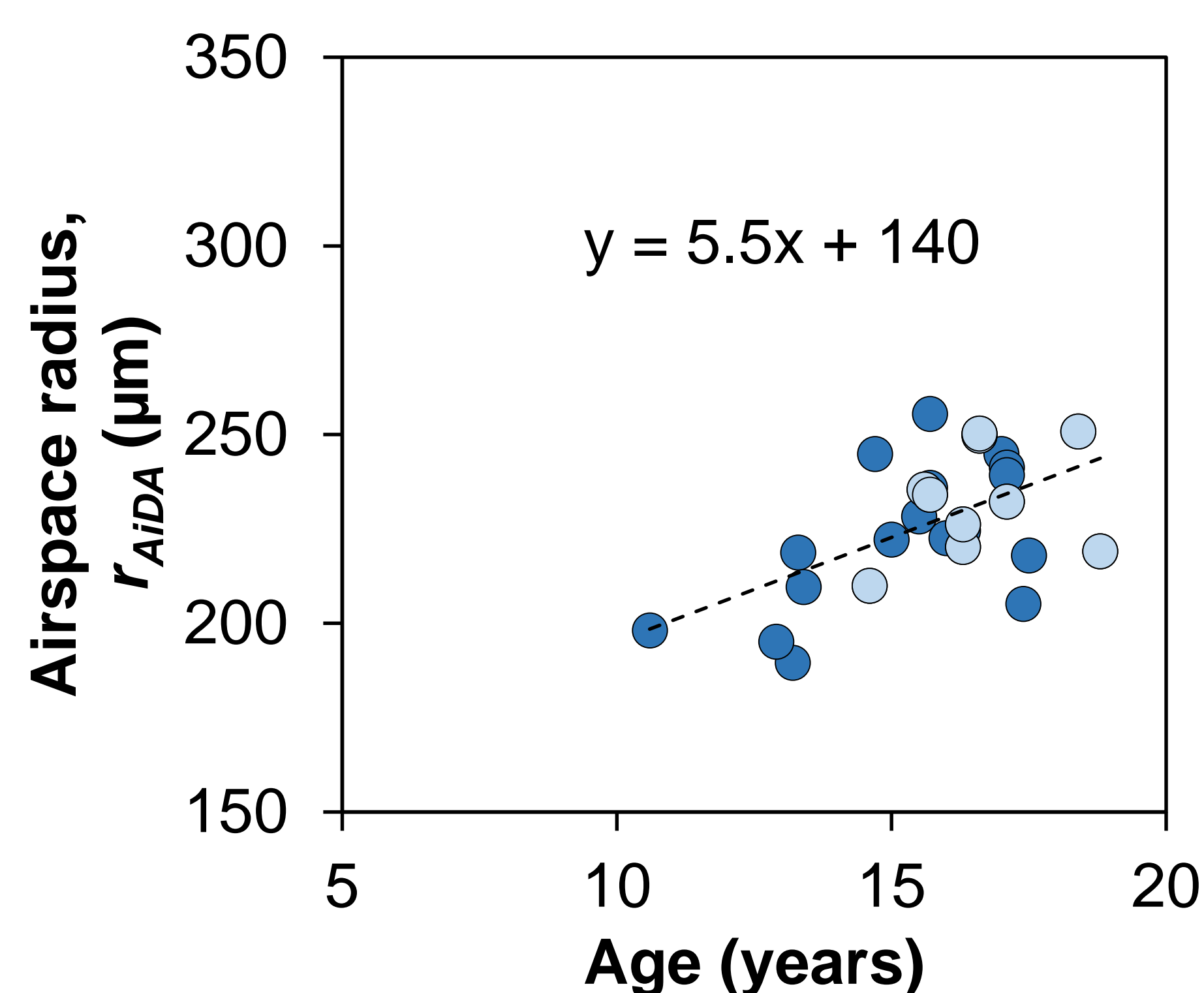
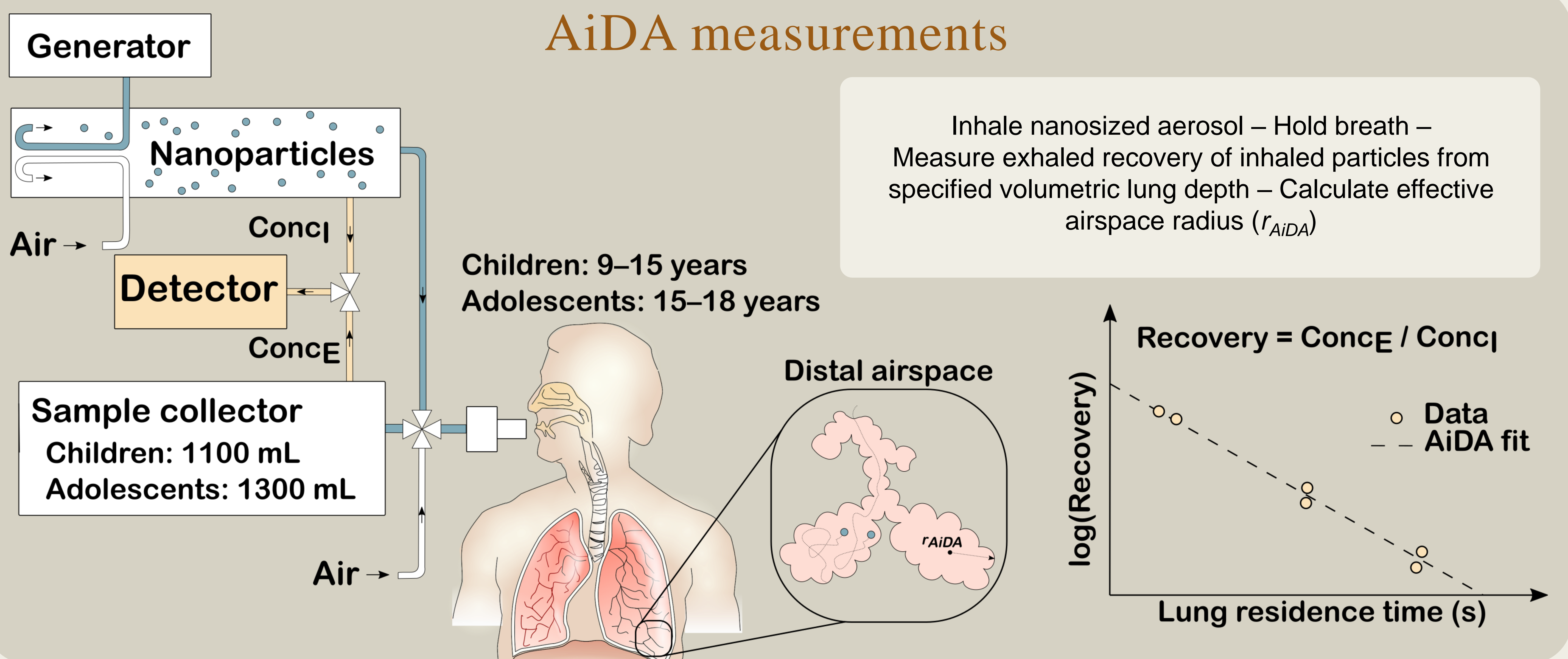


Fig. 1. Age-dependence of the airspace radii for children and adolescents. Both males (light blue) and females (dark blue) are included.

## Results

An age-dependent trend of  $r_{AiDA}$  (Pearson's  $r = 0.57$ ;  $p = 0.002$ ) was found for subjects in the ages 9–18 years (Fig. 1).

The  $r_{AiDA}$  were (mean ± standard deviation):

- 209 ± 17 μm for children,
- 233 ± 13 μm for adolescents
- 267 ± 23 μm for an adult reference group.

These results suggest that the distal lung structure and alveoli are developed at a young age, and that distal airspaces grow from childhood, through adolescence, to adulthood (Fig. 2).

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**FORMAS**

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