

Table 1
Values adopted for geometric parameters and for permeability and diffusion coefficients

Symbol	Description	Value	Reference
N	Number of carboxysomes per cell	6	Reinhold et al., 1991
r_1	Radius of CO ₂ source zone ('CA space') within carboxysomes	0.01 μm	see Reinhold et al., 1991
r_2	Radius of carboxysome	0.2 μm	Reinhold et al., 1989
r_3	Radius of inner cytoplasmic region (up to thylakoid zone)	1.73 μm	Allen 1968
r_4	Radius of inner + outer cytoplasmic regions (up to plasmalemma)	1.77 μm	Derived from cell volume as given in Reinhold et al., 1989
r_5	Radius of cytoplasm + periplasmic space (PS)	1.87 μm	PS taken as arbitrary fraction of unstirred layer, see text.
r_6	Radius of cell + unstirred layer	3.54 μm	$2 \times r_4$ (see text)
P_b	Permeability coefficient of lipid bilayer membrane to CO ₂	$3.5 \times 10^3 \mu\text{m s}^{-1}$	Gutknecht et al., 1977
D_C	Coefficient for diffusion of CO ₂ in water	$1.88 \times 10^3 \mu\text{m}^2 \text{s}^{-1}$	Mazarei and Sandall, 1980
D_H	Coefficient for diffusion of HCO ₃ ⁻ in water	$1.15 \times 10^3 \mu\text{m}^2 \text{s}^{-1}$	Walker et al., 1980