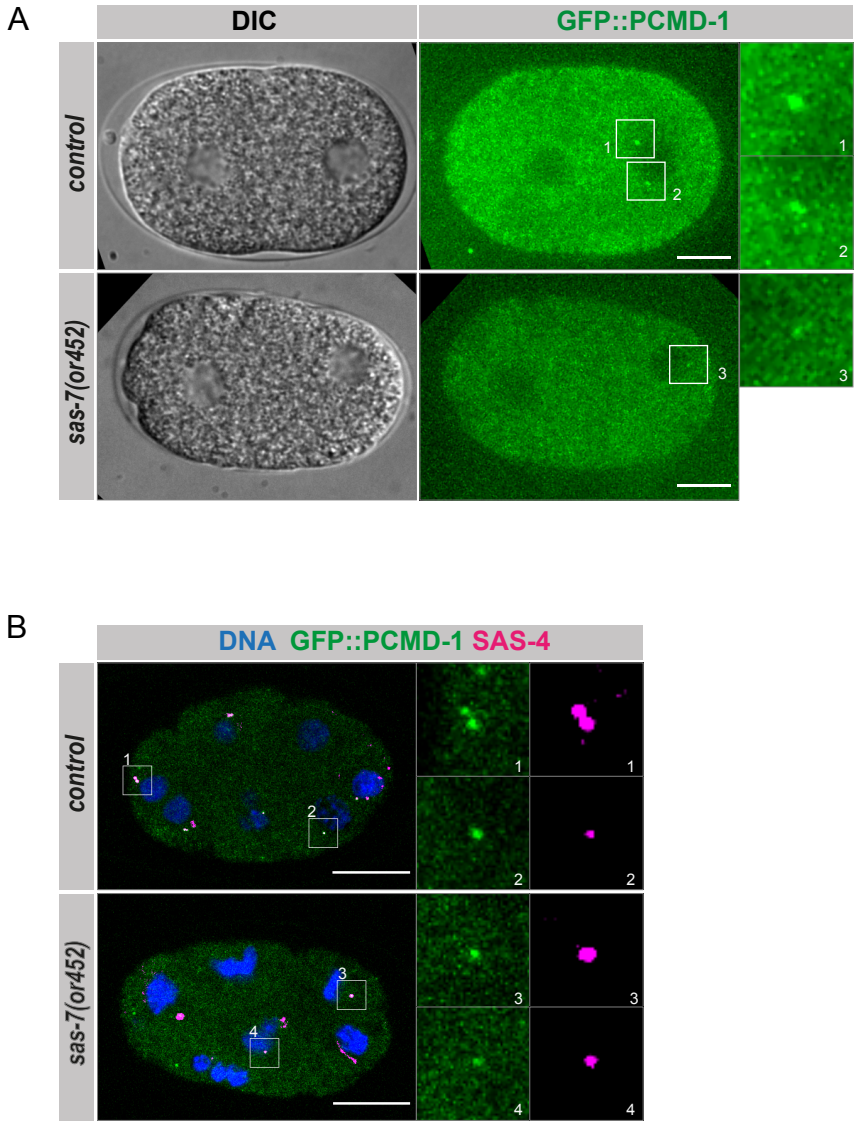
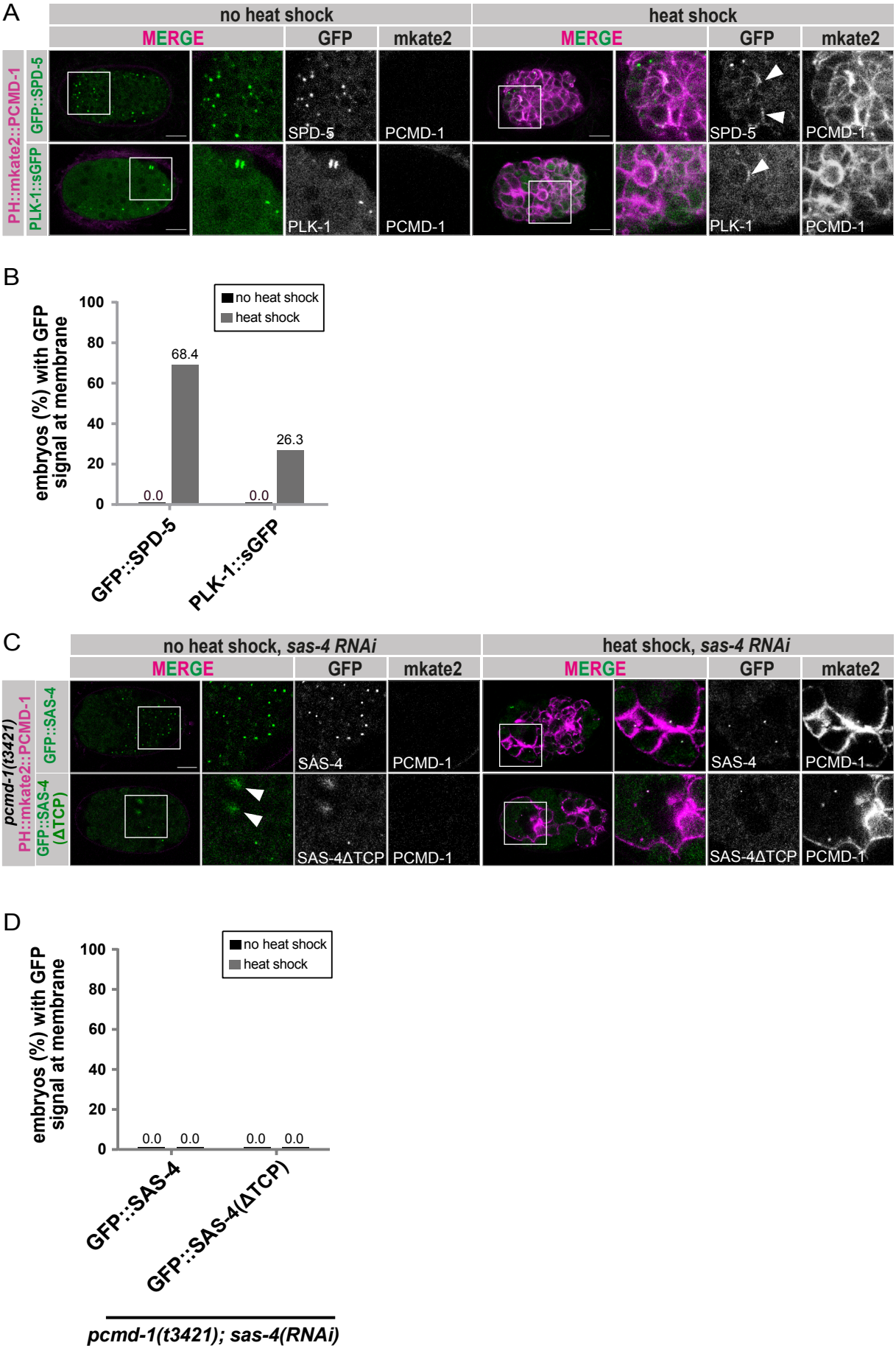


Fig. S1. SAS-7 recruits PCMD-1 to the centrioles in early embryos
(A) Stills of time-lapse spinning disc confocal images of *gfp::pcmd-1* (n=6) and *gfp::pcmd-1;sas-7(or452)* (n=8) embryos during pronuclear migration. Centrosomes are shown enlarged for the GFP::PCMD-1 signal.
(B) Representative confocal images of fixed *gfp::pcmd-1* (n=3) and *gfp::pcmd-1;sas-7(or452)* (n=8) embryos (>6 nuclei) stained for DNA, GFP and SAS-4. Insets represent single channels of the centrioles.
In all panels, scale bars are 10 μm.

Development • Supplementary information



Development • Supplementary information

Fig. S2. PCMD-1 targeting of SPD-5 and PLK-1 to the plasma membrane in the presence of endogenous PCMD-1 is less efficient

(A) Representative multicellular embryos of the 'translocations assay' using GFP::SPD-5 (n=19 no heat shock; n=19 heat shock), and PLK-1::sGFP (n=20 no heat shock; n=19 heat shock) in a wild-type background. Selected regions are enlarged and shown as merge and single channels. Note that plasma membrane-localized PLK-1::sGFP is faint. Scale bars are 10 µm.

(B) Quantification of (A); the percentage of embryos (%) with GFP signal at the membrane after heat shock in the wild-type background.

(C) Representative multicellular embryos of the 'translocations assay' using GFP::SAS-4 (n=33 no heat shock; n=36 heat shock), and GFP::SAS-4(deltaTCP) (n=30 no heat shock; n=29 heat shock) in a *pcmd-1(t3421)* background and treated with *sas-4(RNAi)*. Selected regions are enlarged and shown as merge and single channels. Scale bars are 10 µm.

(D) Quantification of (C); the percentage of embryos (%) with GFP signal at the membrane after heat shock in the *sas-4(RNAi)* background.

Development • Supplementary information

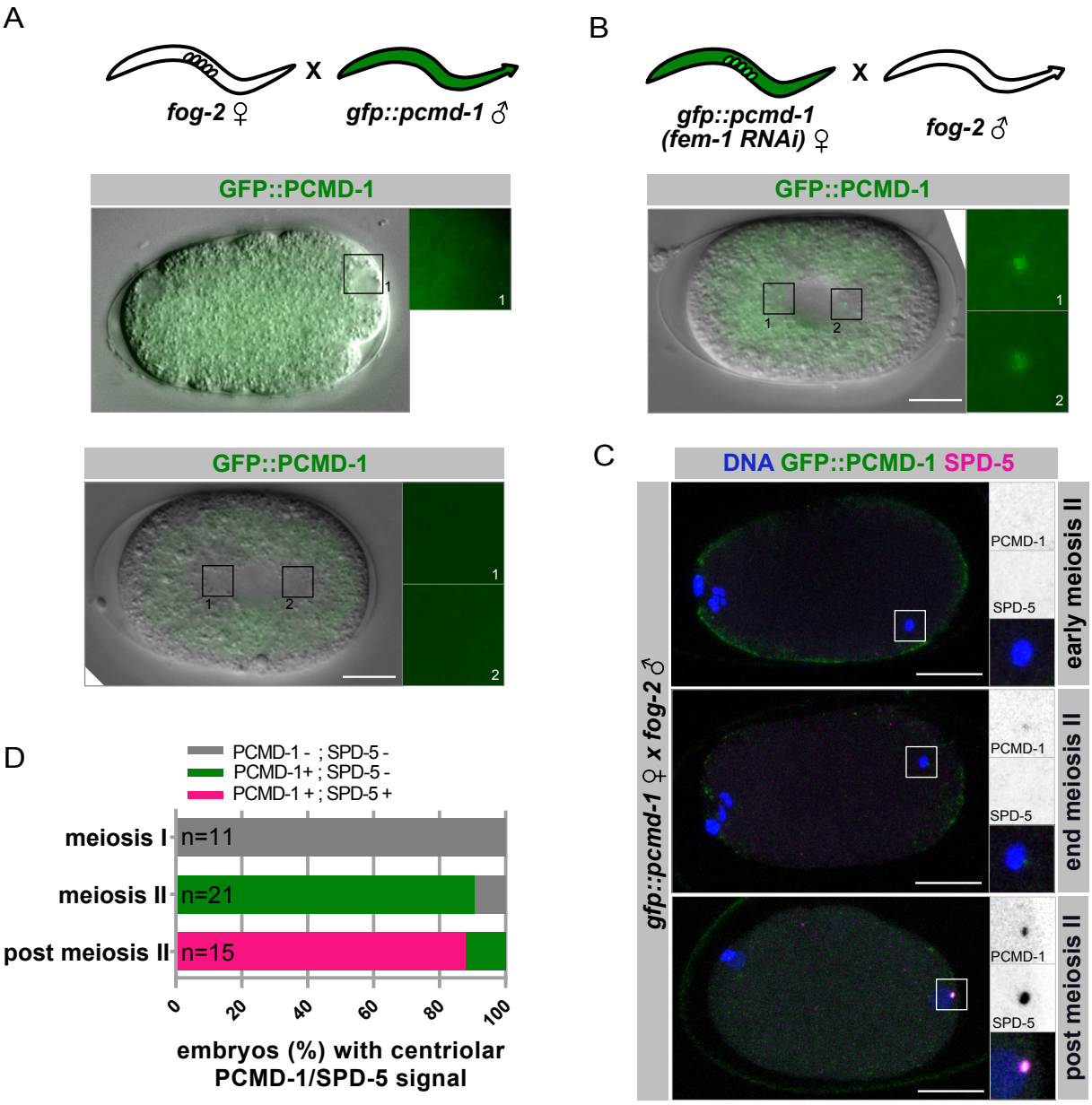


Fig. S3. PCMD-1 is recruited before SPD-5 to sperm-derived centrioles
(A) Schematic representation of a marked mating experiment where *fog-2(n71)* females were mated with *gfp::pcmd-1* males. The images below represent one-cell embryos taken by live-cell imaging shortly after meiosis II (n=6) and at metaphase (n=11). Centrosomal areas were determined by DIC imaging and are shown enlarged for the GFP::PCMD-1 signal.
(B) Schematic representation of a marked mating experiment where *fem-1(RNAi)*-treated *gfp::pcmd-1* females were mated with *fog-2(n71)* males (n=10). The image below represents a one-cell embryo taken by live-cell imaging. Centrosomal areas were determined by DIC imaging and are shown enlarged for the GFP::PCMD-1 signal.
(C) Images of fixed embryos in different stages of meiosis II, derived from the cross indicated in (B) and stained for DNA, GFP and SPD-5. Enlarged are sperm-associated centrosomal signals merged and as single channels.
(D) Quantification of (C) percentage of embryos (%).
Scale bars in all panels are 10 µm.

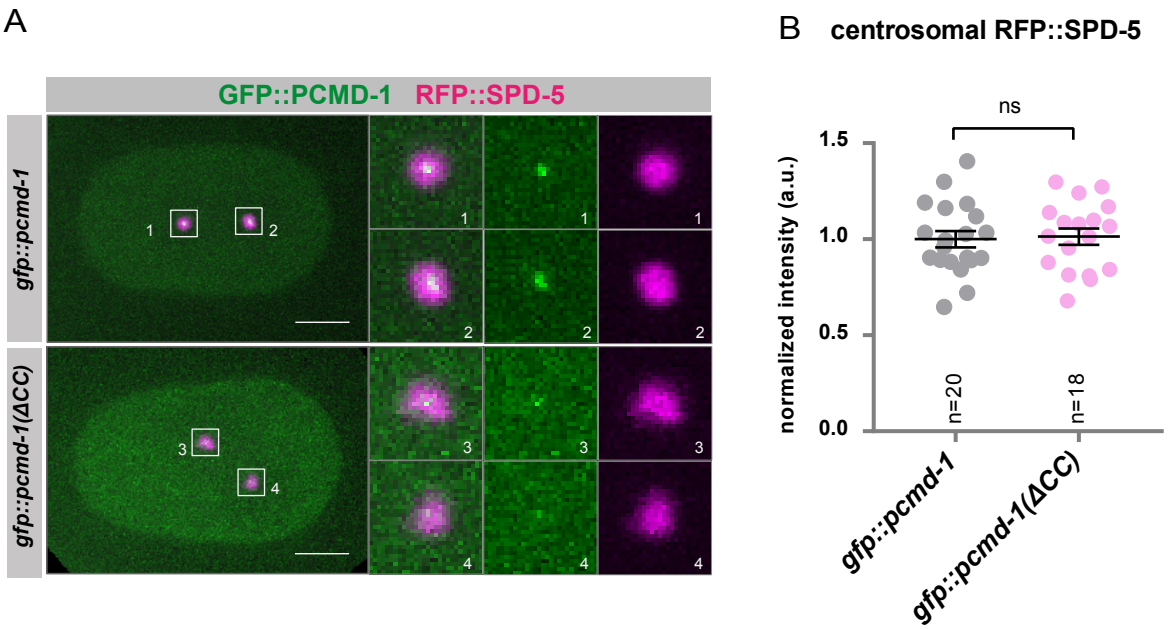
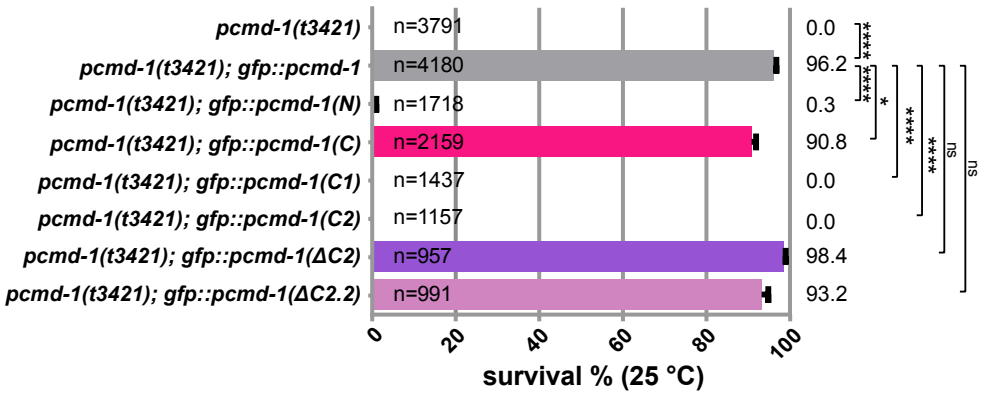


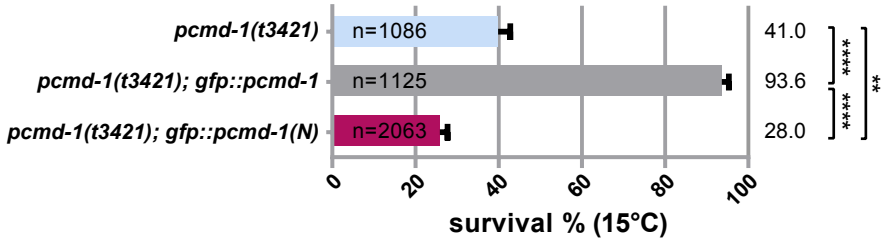
Fig. S4. Deletion of the coiled-coil domain PCMD-1 does not affect centrosomal SPD-5 levels
(A) Stills of time-lapse imaging of embryos expressing *rfp::spd-5 gfp::pcmd-1* (n=10) and *rfp::spd-5 gfp::pcmd-1(deltaCC)* (n=9) at metaphase. Centrosomal areas are shown enlarged as merge and for the RFP::SPD-5, GFP::PCMD-1 signal. n=number of embryos.
(B) Normalized centrosomal RFP signal intensities in embryos expressing *rfp::spd-5 gfp::pcmd- 1* and *rfp::spd-5 gfp::pcmd-1(deltaCC)* at metaphase. Two Sample t-test. n=number of analyzed centrosomes. ns $p>0.05$. Scale bars are 10 µm.

Development • Supplementary information

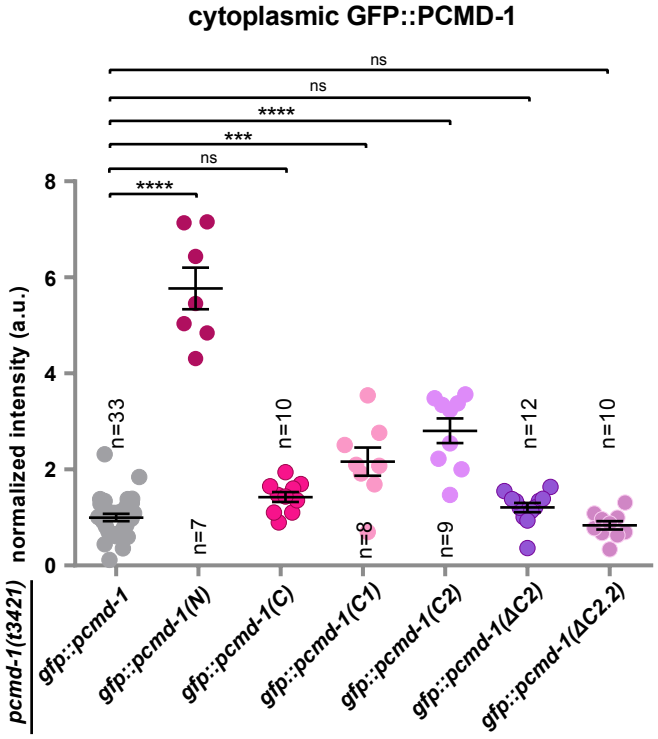
A



B

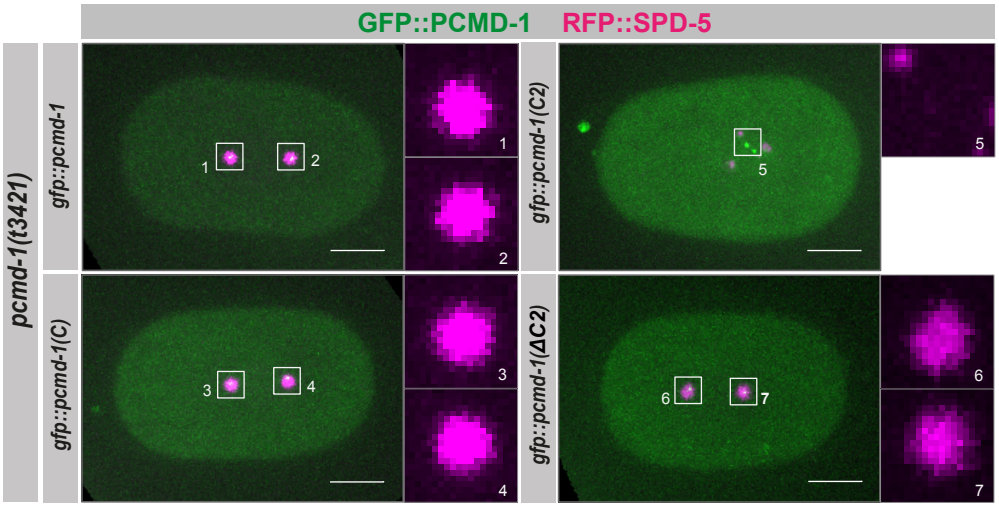


C



Development • Supplementary information

D



E

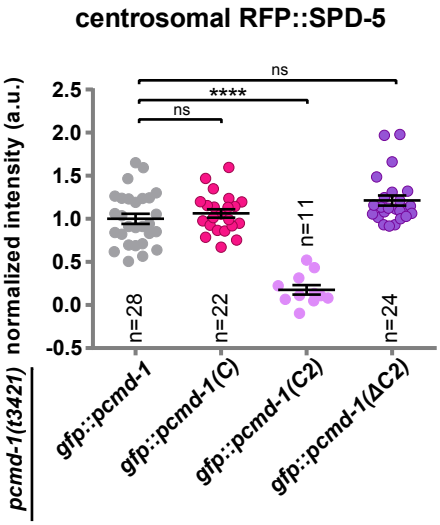


Fig. S5. The C2-region of PCMD-1 is insufficient to recruit SPD-5 to the centrosome

(A) Survival (%) of *gfp::pcmd-1, gfp::pcmd-1(N), gfp::pcmd-1(C), gfp::pcmd-1(C1), gfp::pcmd-1(C2), gfp::pcmd-1(deltaC2)* and *gfp::pcmd-1(deltaC2.2)* in the *pcmd-1(t3421)* background at 25C. Multiple Comparison with Kruskal Wallis test and post-hoc Dunn's test adjusted with Holm correction. n=number of analyzed embryos.

(B) Survival (%) of *gfp::pcmd-1* and *gfp::pcmd-1(N)* embryos in the *pcmd-1(t3421)* background at 15C. P-values were determined with multiple Comparison with Kruskal Wallis test and post-hoc Dunn's test adjusted with Holm correction, n=number of analyzed embryos.

(C) Normalized cytoplasmic GFP signal intensities of *gfp::pcmd-1, gfp::pcmd-1(N), gfp::pcmd-1(C), gfp::pcmd-1(C1), gfp::pcmd-1(C2), gfp::pcmd-1(deltaC2)* and *gfp::pcmd-1(deltaC2.2)* embryos, in combination with the *mCherry::h2b* in the *pcmd-1(t3421)* background at NEB. P-values were determined with multiple Comparison with Kruskal Wallis test and post-hoc Dunn's test adjusted with Holm correction, n=number of analyzed embryos.

(D) Stills of time-lapse imaging of *rfp::spd-5; gfp::pcmd-1* (n=14) and *rfp::spd-5; gfp::pcmd-1(C)* (n=11), *rfp::spd-5; gfp::pcmd-1(C2)* (n=9) and *rfp::spd-5; gfp::pcmd-1(deltaC2)* (n=12) of embryos in the *pcmd-1(t3421)* background at metaphase. Note that in two *rfp::spd-5; gfp::pcmd-1(C2) embryos* the PCM does not co-localize with the centrioles. Centrosomal areas are shown enlarged as merge and for the RFP::SPD-5, GFP::PCMD-1 signal. n=number of embryos.

(E) Normalized centrosomal RFP::SPD-5 signal intensities at metaphase of embryos in (D). p-values were determined with Multiple Comparison with Kruskal Wallis test and post-hoc Dunn's test adjusted with Holm correction, n=number of analyzed centrosomes.

In all panels error bars denote s.e.m. p-values represent: **p<0.01, ***p<0.001, ****p<0.0001, ns p>0.05. Scale bars are 10 µm.

Development • Supplementary information

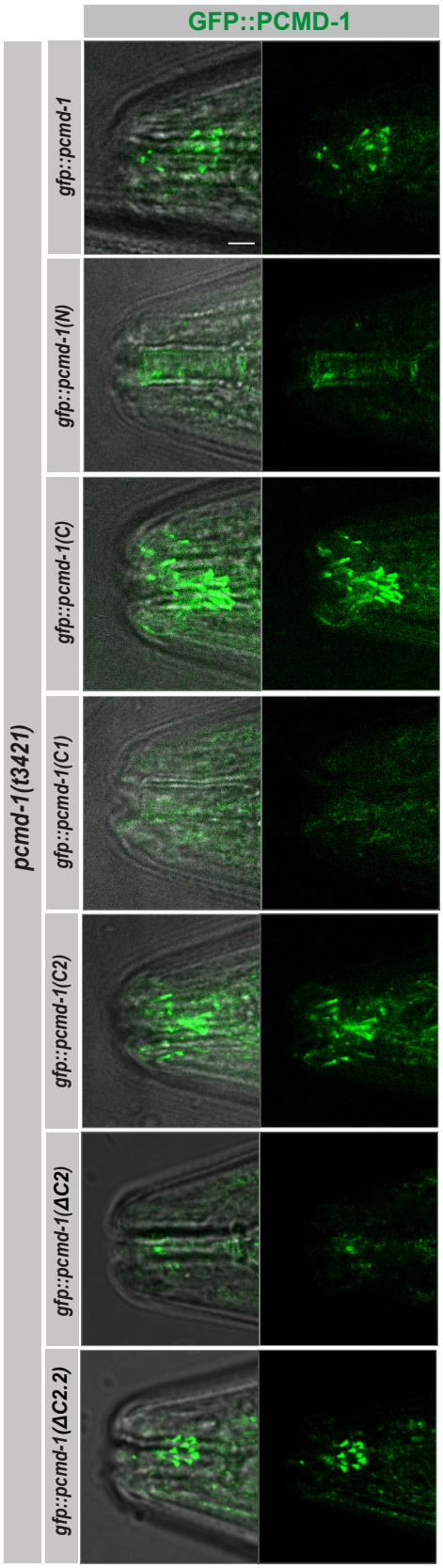
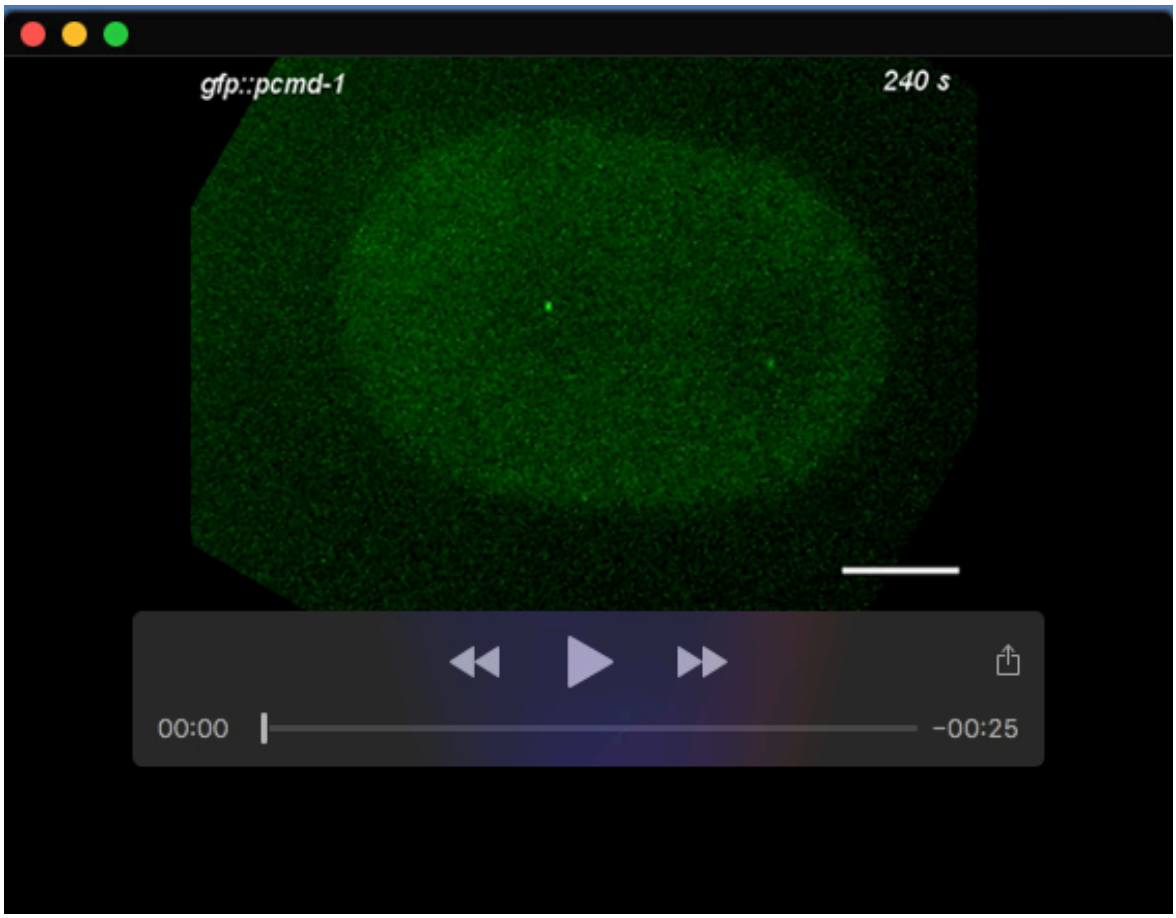


Fig. S6. The region spanning the IDR6 is necessary for ciliary targeting of PCMD-1
Localization of GFP::PCMD-1, GFP::PCMD-1(N), GFP::PCMD-1(C), GFP::PCMD-1(C1), GFP::PCMD-1(C2), GFP::PCMD-1(deltaC2) and GFP::PCMD-1(deltaC2.2) to the ciliary base in adult animals. n=5 animals for each condition.
Scale bars are 10 µm.

Development • Supplementary information

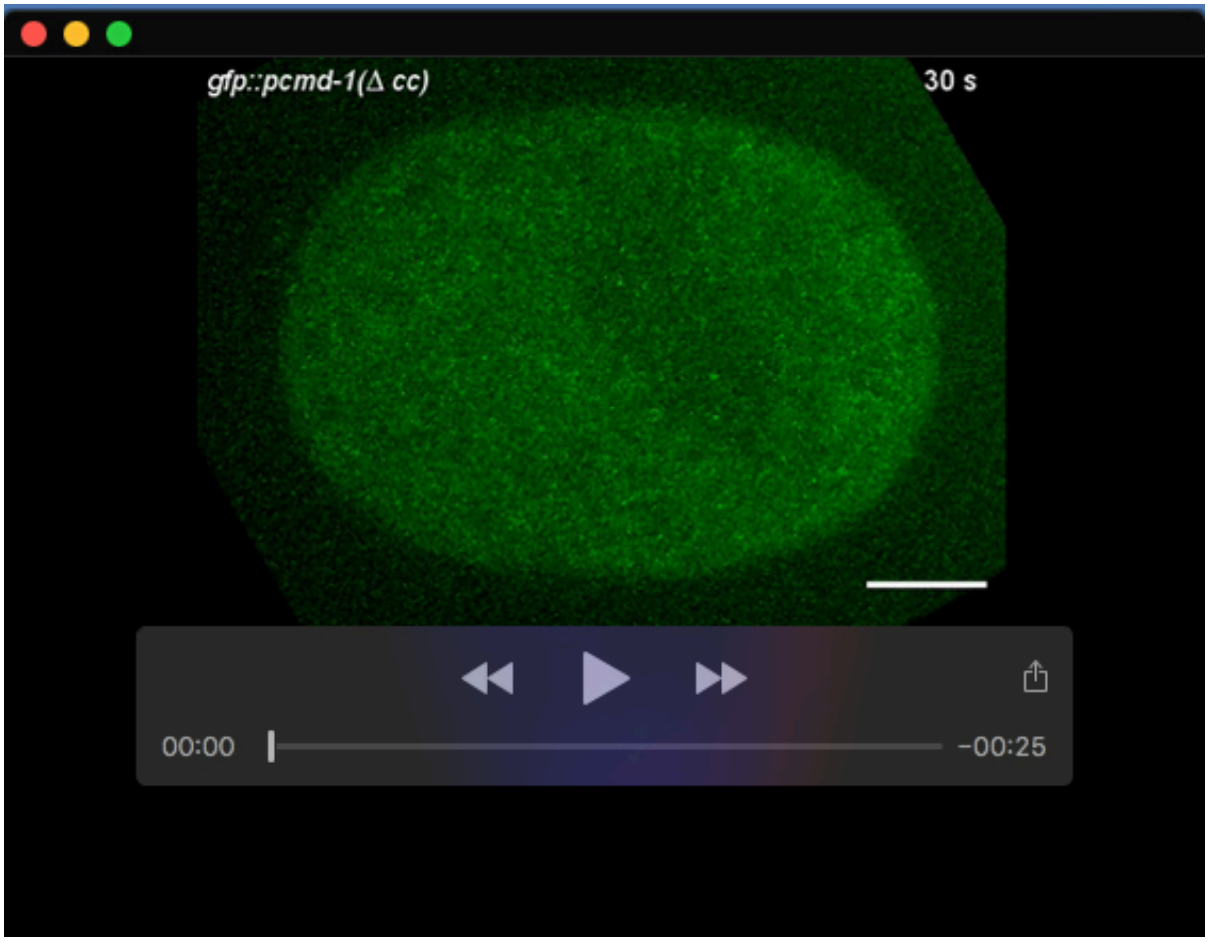
Table S1. Strains and materials used in the study.

Click here to download Table S1



Movie 1. Time-lapse of the first cell cycle of a GFP::PCMD-1 expressing embryo (related to figure 4C). In the control embryo, GFP::PCMD-1 localizes to the centrosome throughout the first cell cycle. Live-cell spinning disk microscopy. The scale bar is 10 μm.

Development • Supplementary information



Movie 2. Time-lapse of the first cell cycle of a GFP::PCMD-1 expressing embryo lacking the predicted coiled-coil domain (related to figure 4C) In the *gfp::pcmd-1(ΔCC)* embryo, GFP::PCMD-1(ΔCC) localizes to the centrosome with reduced levels. Live-cell spinning disk microscopy. The scale bar is 10 μm.

Development • Supplementary information