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## РОЛЬ ЦИТОСКЕЛЕТА В СИГНАЛЬНЫХ СИСТЕМАХ РАСТЕНИЙ

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### Аннотация

В обзоре проведен анализ данных литературы и результатов собственных исследований об участии цитоскелета в сигнальных системах клеток растений. Основные компоненты цитоскелета – тубулиновые микротрубочки и актиновые микрофиламенты – обладают ярко выраженной динамической нестабильностью, постоянно находясь в состоянии сборки/разборки, изменяют свое структурное и полимерное состояние, локализацию, ориентацию, состав изотипов, контакты между собой и клеточными структурами. Именно эта реорганизация цитоскелета, происходящая под влиянием внешних и внутренних факторов, и определяет его сигнальные функции. Цитоскелет-зависимый сигналинг включает целую иерархию последовательных биохимических и физиологических изменений, влияющих на форму клеток и органов, микроструктуру тканей, деление, полярность, дифференцировку, различные типы подвижности клеток, а также эндо-, экзоцитоз и везикулярный транспорт веществ. Рассматриваются новые данные о возможности участия цитоскелета в межклеточных коммуникациях через «синапсоподобные» контакты.

**Ключевые слова:** растения, цитоскелет, динамическая нестабильность, сигналы, трансдукция, клеточный ответ.

### Summary

*L.P. Khokhlova, Yu.Yu. Nevmerzhitskaya.* The Role of Cytoskeleton in Plant Signaling Systems.

This overview presents the analysis of literature and the author's own research results on the role of cytoskeleton in plant cells signaling systems. The main components of cytoskeleton – tubulin microtubules and actin microfilaments – are characterized by a great dynamic instability being constantly in an assembly/disassembly state and changing in their structural and polymeric state, localization, orientation, isotope composition, and contacts between each other and cell structures. It is the reorganization of cytoskeleton occurring in response to external and internal factors that determines its signaling functions. Cytoskeleton-dependent signaling initiates a chain of biochemical and physiological reactions, which influence cells' and organs' form, microstructure of tissues, division, polarity, differentiation, different types of cells mobility, as well as exo- and endocytosis and vesicular transport of substances. The work also considers new data about the possible participation of cytoskeleton in intercellular communication via "synapse-like" contacts.

**Key words:** plants, cytoskeleton, dynamic instability, signals, transduction, cell response.

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